```
              GenCore version 4.5
          Copyright (c) 1993 - 2000 Compugen Ltd.

OM nucleic - nucleic search, using sw model

Run on:       August 28, 2002, 07:56:20 ; Search time 202.43 Seconds
                                           (without alignments)
                                           13154.840 Million cell updates/sec

Title:        US-08-711-417C-165
Perfect score: 1551
Sequence:     1 ATGGATGCTGACGAGGGTCA.........ACCGCTTCCACATGAGCTAA 1551

Scoring table: IDENTITY_NUC
              Gapop 10.0 , Gapext 1.0

Searched:     1736436 seqs, 858457221 residues

Total number of hits satisfying chosen parameters:       3472872

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
                Maximum Match 100%
                Listing first 45 summaries

Database :    N_Geneseq_032802:*
    1: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1980.DAT:*
    2: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1981.DAT:*
    3: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1982.DAT:*
    4: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1983.DAT:*
    5: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1984.DAT:*
    6: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1985.DAT:*
    7: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1986.DAT:*
    8: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1987.DAT:*
    9: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1988.DAT:*
   10: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1989.DAT:*
   11: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1990.DAT:*
   12: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1991.DAT:*
   13: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1992.DAT:*
   14: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1993.DAT:*
   15: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1994.DAT:*
   16: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1995.DAT:*
   17: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1996.DAT:*
   18: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1997.DAT:*
   19: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1998.DAT:*
   20: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA1999.DAT:*
   21: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA2000.DAT:*
   22: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA2001A.DAT:*
   23: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA2001B.DAT:*
   24: /SIDS1/gcgdata/hold-geneseq/geneseqn-embl/NA2002.DAT:*
```

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description		
1	1551	100.0	1551	19	AAV42840	Human Ikaros isofo		
2	1468.8	94.7	6439	21	AAC76542	Human ORFX ORF2097		
3	1386	89.4	1386	17	AAT16060	Human Ikaros cDNA		
4	1386	89.4	1386	19	AAV66969	Human Ikaros cDNA		
5	1382.4	89.1	1611	15	AAQ44980	Human Ikaros encod		
6	1379.6	88.9	1386	19	AAV42806	Human Ikaros pepti		
7	1174.8	75.7	2049	17	AAT16062	Human Ikaros isofo		
8	1174.8	75.7	2049	19	AAV66971	Murine Ikaros cDNA		
9	1174.8	75.7	2049	19	AAV42808	Mouse Ikaros isofo		
10	868	56.0			AAT16065	Ikaros cDNA. Not		
11	868	56.0	1004	17	AAV66974	Ikaros isoform enc		
12	868	56.0	1004	19	AAV42811	Human Ikaros cDNA.		
13	813.2	52.4	1004	19	AAQ44979	Murine Ikaros gene		
14	813.2	52.4	1788	15	AAT16059	Murine Ikaros cDNA		
15	813.2	52.4	1788	17	AAV66968	Murine Ikaros enco		
16	811.6	52.3	1788	19	AAV42805	Mouse Ikaros isofo		
17	689.4	44.4	1788	19	AAT16061	Murine Ikaros cDNA		
18	689.4	44.4	1296	17	AAV66970	Mouse Ikaros encod		
19	689.4	44.4	1296	19	AAV42807	Mouse Ikaros isofo		
20	680	43.8	1296	19	AAV67120	Ikaros protein enc		
21	577	37.2	714	19	AAT16063	Murine Ikaros cDNA		
22	577	37.2	1170	17	AAV66972	Mouse Ikaros encod		
23	573.8	37.0	1170	19	AAV42809	Mouse Ikaros isofo		
24	458.2	29.5	1170	17	AAT16064	Murine Ikaros cDNA		
25	458.2	29.5	1128	19	AAV66973	Mouse Ikaros encod		
26	458.2	29.5	1128	19	AAV42810	Mouse Ikaros isofo		
27	457.2	29.5	1128	19	AAV67119	Ikaros protein enc		
28	411.8	26.6	708	19	AAZ10900	Mouse Aiolos codin		
29	408.6	26.3	1984	20	AAT60490	Mouse Aiolos cDNA.		
30	404.2	26.1	1984	18	AAZ11960	Murine Helios-1 cD		
31	401.6	25.9	1598	20	AAZ11963	Human Helios-2 cDN		
32	329.6	21.3	1927	20	AAZ11962	Murine Helios-2 cD		
33	324	20.9	1520	20	AAA12375	Murine embryonic b		
34	255	16.4	2688	21	AAV67127	Human Aiolos parti		
35	234	15.1	255	19	AAZ10895	Human Aiolos codin		
36	223.2	14.4	270	19	AAV67126	Ikaros protein enc		
37	216.4	14.0	514	22	AAS26017	Human cDNA encodin		
38	216.4	14.0	628	18	AAS26649	Human genomic DNA-		
39	168	10.8	628	20	AAS26650	Human genomic DNA		
40	145.8	9.4	168	19	AAS26651	Human genomic DNA		
41	145.8	9.4	523	22	AAV67125	Ikaros protein enc		
c 42	145.8	9.4	523	22	AAV67122	Ikaros protein enc		
c 43	145.8	9.4	523	22				
44	140.8	9.1	168	19				
45	135	8.7	135	19				

ALIGNMENTS

```
RESULT   1
AAV42840
ID   AAV42840 standard; cDNA; 1551 BP.
XX
AC   AAV42840;
XX
DT   11-JAN-1999  (first entry)
XX
DE   Human Ikaros isoform hIk-1 cDNA.
XX
KW   Ikaros; hIk-1; transcription factor; human; lymphocyte;
KW   cell differentiation; T cell; cancer; immunodeficiency;
KW   Alzheimer's disease; therapy; diagnosis; ss.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   exon            1..26
FT                   /*tag= a
FT                   /number= Ex1
FT   exon            27..163
FT                   /*tag= b
FT                   /number= Ex2
FT   exon            164..420
FT                   /*tag= c
FT                   /number= Ex3
FT   exon            421..588
FT                   /*tag= d
FT                   /number= Ex4
FT   exon            589..714
FT                   /*tag= e
FT                   /number= Ex5
```

```
FT   exon            715..849
FT                   /tag= d
FT                   /number= Ex6
FT   exon            850..1551
FT                   /tag= e
FT                   /number= Ex7
XX
PN   CA2194256-A.
XX
PD   05-MAR-1998.
XX
PF   02-JAN-1997;   97CA-2194256.
XX
PR   05-SEP-1996;   96US-0711417.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1998-378292/33.
DR   P-PSDB; AAW70971.
XX
PT   New nucleic acid encoding Ikaros protein involved in early
PT   differentiation of lymphocytes - existing in several isoforms, and
PT   related products, used to treat e.g. immune diseases or cancer and
PT   to control cell differentiation
XX
PS   Claim 1; Page 127-129; 158pp; English.
XX
CC   This is the nucleotide of human Ikaros cDNA (isoform hIk-1) that.
CC   codes for a 516-amino acid zinc finger protein (see AAW70971) that is
CC   involved in the early differentiation of lymphocytes. It was
CC   isolated from a Jurkat T cell line library using mouse Ikaros exon
CC   7 cDNA as probe. The Ikaros gene maps between p11.2-p13 on human
CC   chromosome 7. The human and murine Ikaros sequences (see AAV42805-11
CC   and AAV42840) are highly conserved. Differential splicing of Ikaros
CC   gene transcripts gives rise to different Ikaros protein isoforms.
CC   The invention provides Ikaros nucleic acids, vectors and host cells
CC   expressing Ikaros proteins. These are used to treat T and B cell
CC   diseases (e.g. immune deficiencies caused by drugs, radiation or
CC   cancers), to control expression of heterologous genes placed under
CC   control of an Ikaros-responsive element, to treat nervous system
CC   diseases (e.g. Alzheimer's disease) and to modulate cell division,
CC   amplification or differentiation, especially in haematopoietic
CC   cells. Some Ikaros isoforms are antagonistic of others and may be
CC   used to inhibit interaction with DNA sequences. The same effect
CC   can be achieved with Ikaros-binding oligonucleotides. Examining
CC   the expression of the Ikaros gene, or its allelic structure, can be
CC   used to assess risk of acquiring the above diseases.
XX
SQ   Sequence 1551 BP; 393 A; 450 C; 443 G; 265 T; 0 other;
```

```
Query Match        100.0%;   Score 1551;   DB 19;   Length 1551;
Best Local Similarity   100.0%;   Pred. No. 0;
Matches 1551;   Conservative   0;   Mismatches   0;   Indels   0;   Gaps   0;

Qy      1 ATGGATGCTGACGAGGGTCAAGACATGTCTTTCTCATCAGGGAAGGAAAGCCCCCTGTA 60
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 atggatgctgacgagggtcaagacatgtcttttctcatcagggaaggaaagcccccctgta 60

Qy     61 AGGGATACTCCAGATGAGGGCGATGAGCCCATGCCGATCCCCGAGGACCTCCCACCACC 120
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     61 agcgatactccagatgagggcgatgagcccatgccgatcccccgaggacctctccaccacc 120

Qy    121 TCGGGAGGACAGCAAAGCTCCAAGAGTGACAGAGTCGTGGCCAGTAATGTTAAAGTAGAG 180
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    121 tcgggaggacagcaaagctccaagagtgacagagtcgtggccagtaatgttaaagtagag 180

Qy    181 ACTCAGAGTGATGAAGAGAGAATGGGCGTGCCTGTGTGAAATGAAATGAATGTGCGGAG 240
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    181 actcagagtgatgaagagagaatgggcgtgcctgtgaaatgaatggggaagaatgtgcggag 240
```

```
Qy    241 GATTTACGAATGCTTGATGCCTCCGGGAGAGAAAATGAATGGCTCCCAGAGGACCAAGGC 300
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    241 gatttacgaatgcttgatgcctgtgcctcgggagagaaaatgaatggctcccagggaccaaggc 300

Qy    301 AGCTCGGCTTTGTCCGGAGTTGGAGGCATTCGACTTCCTAACCGAAAACTAAAGTGTCAT 360
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    301 agctcggcttgtcgggaggttggaggcattcgacttcctaaccgaaaactaaagtgtgat 360

Qy    361 ATCTGTGGATCATTTGCATCGGCCCCAATGTCGTCATGGTTCACAAAGAAGCCACACT 420
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    361 atctgtgggatcatttgcatcggccccaatgtctcatggttcacaaaagaagccacact 420

Qy    421 GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGGCAACCTG 480
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    421 ggagaacggcccttccagtgcaatcagtgcgggggcctcattcacccagaagggcaacctg 480

Qy    481 CTCCGGCACATCAAGTGCATTCCGGGAGAAGCCCTTCAAATGCCACCTGCACCTGCAACTAC 540
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    481 ctccggcacatcaagctgcattccgggagaagccctcaaatgccacctgcacctgcaactac 540

Qy    541 GCCTGCCCGGAGGACGGACGCCCTCACTGGCCACCTGAGGACGCACTCCGTTGGTAAACCT 600
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    541 gcctgcccggaggacggacgccctcacctggccacctgaggacgcacctcggttggtaaacct 600

Qy    601 CACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAACGTCTTTAGAGGAACATAAA 660
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    601 cacaaatggatattgtggccgaagctataaacagcgaacgtctttagaggaacataaa 660

Qy    661 GAGCCGCTGCCACAACTACTTGGAAAGCATGGCCTTCCGGGCACACTGTACCCAGTCATT 720
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    661 gagcgctgccacaactactggaaagcatggccttccgggcacactgtaccccagtcatt 720

Qy    721 AAAGAGAAACTAAGCACAGTGAAAATGGCAGAAGACCTGTGCAAGATAGGATCAGAGAGA 780
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    721 aaagaagaaactaagcacagtgaaaatggcagaagaccctgtgcaagataggatcagagaga 780

Qy    781 TCTCTCGTGTCTGGACAGACTAGCAAGTAATGTCGCCAAACGTAAGAGCTCTATGCCTCAG 840
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    781 tctctcgtgtctggacagactagcaagtaatgtcgccaaacgtaagagctctatgcctcag 840

Qy    841 AAATTTCTTGGGACAAGGGCCTGTCCGACACGCCCTACGACAGTGCCACGTACGAGAAG 900
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    841 aaatttcttgggacaagggcctgtccgacacgcccctacgacagtgccacgtacgagaag 900

Qy    901 GAGAACGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAACAACGCCATCAACTAC 960
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    901 gagaacgaaatgatgaagtcccacgtgatggaccaagccatcaacaacgccatcaactac 960

Qy    961 CTGGGGGCCGAGTCCCTGCCCGCCGTGTGCGAGACCCCCGGGTTCCGAGGTGGTC 1020
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    961 ctggggccgagtccctgcccgccgtgtgcgagacccccgggcggttccgaggtggtc 1020

Qy   1021 CCGGTCATCAGCCCGATGTACCAGCTGCACAGGCCGCTCGGAGGGCACCCGCCTCCAAC 1080
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1021 ccggtcatcagcccgatgtaccagctgcacaggccgctcggagggcaccccgcctccaac 1080

Qy   1081 CACTCGGCCCCAGGACAGCGCCGCCGGGAGCCGTGCTCCTTCAAGGCCAAGTTGGTG 1140
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1081 cactcggccccaggacagcgccgccgggagtaccctgctcctccaaggccaagttggtg 1140

Qy   1141 CCCTCGGAGCGCGGAGCGCCGGAGGCGTCGGGGCGTCCCCGAGCACCTCCAACCACC 1200
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1141 ccctcggagcgcggagcgccggaggcgtcgggcgtccccgagcaacagtccaccgagagc 1200

Qy   1201 AACAACGAGGAGCAGAGTCCCAAGAGTGACAGAGTCGTGGCCAGTAATGTTAAAGTAGAG 1260
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1201 aacaacgaggagcagcgcagcggcggtcttatctacctgaccaacatcaccgcccgacgcgcg 1260

Qy   1261 CAACGGCGTGTCGCTCAAGGAGGAGGCGCCGCCGGGGAATGTGCGGAG 1320
          ||||||||||||||||||||||||||||||||||||||||||||||||
Db   1261 caacggcgtgtcgctcaaggaggaggcgccgccgggg 1320

Qy   1321 AACTCGCAGACAGCGCCGCTCCGTGTCAGCACCAGCGTGTACAAG 1380
          ||||||||||||||||||||||||||||||||||||||||||||||
Db   1321 actcagagtgatgaagag 1380
```

```
Db   1321  ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
           aactccgcaggacgcgctccgcgtggtcagcaccagccggggagcagatgaaggtgtacaag  1380
Qy   1381  TGCGAACACTGCCGGGTGCTCTTCCTCGGATCACGTCATGTTACACCATTCCACATGGGCTGC  1440
           |||||||||||||||||||||||| ||||||||||||| |||||||| |||||||||||||
Db   1381  tgcgaacactgccgggtgctcttcctgatcacgtcatgtacaccatcccacatgggctgc  1440
Qy   1441  CACGGCTTCCGTGATCCTTTTGAGTGCAACATGTGCGGCTACCAGCCAGGACCGGTAC  1500
           ||||||| ||||||||||||||||||||||||||||||||||| ||||| |||||||||
Db   1441  cacggctccgtgatccttttgagtgcaacatgtgcggctaccacagccagaccggagtac  1500
Qy   1501  GAGTTCTCGTCGCACATAACGCGAGGGGAGCCACCGCCTTCCACATGAGCTAA  1551
           ||||||| ||||||||||||||||||||||||||||| |||||||||||||||
Db   1501  gagttctctcgtcgcacataacgcgagggggagccaccgcttccacatgagctaa  1551
```

RESULT 2
AAC76542
ID   AAC76542 standard; cDNA; 6439 BP.
XX
AC   AAC76542;
XX
DT   08-FEB-2001 (first entry)
XX
DE   Human ORFX ORF2097 polynucleotide sequence SEQ ID NO:4193.
XX
KW   Human; open reading frame; ORFX; detection; cytostatic; hepatotropic;
KW   vulnerary; antipsoriatic; antiparkinsonian; nootropic; neuroprotective;
KW   anticonvulsant; osteopathic; antiarthritic; immunosuppressant; cardiant;
KW   immunostimulant; thrombolytic; coagulant; vasotropic; antidiabetic;
KW   hypotensive; dermatological; immunosuppressive; antiinflammatory;
KW   antiviral; antibacterial; antifungal; antirheumatic; antithyroid;
KW   antianaemic; gene therapy; cancer; proliferative disorder; hypertension;
KW   neurodegenerative disorder; osteoarthritis; graft vs host disease;
KW   cardiovascular disease; diabetes mellitus; hypothyroidism; SCID; AIDS;
KW   cholesterol ester storage; systemic lupus erythematosus; infection;
KW   severe combined immunodeficiency; malaria; autoimmune disorder; asthma;
KW   allergy; aplastic anaemia; nocturnal haemoglobinuria; burn; wound;
KW   bone damage; cartilage damage; antiinflammatory disease; coagulation;
KW   thrombosis; contraceptive; ss.
XX
OS   Homo sapiens.
XX
PN   WO200058473-A2.
XX
PD   05-OCT-2000.
XX
PF   31-MAR-2000; 2000WO-US08621.
XX
PR   31-MAR-1999; 99US-0127607.
PR   02-APR-1999; 99US-0127636.
PR   05-APR-1999; 99US-0127728.
PR   30-MAR-2000; 2000US-0540763.
XX
PA   (CURA-) CURAGEN CORP.
XX
PI   Shimkets RA, Leach M;
XX
DR   WPI; 2000-602362/57.
DR   P-PSDB; AAB42333.
XX
PT   Novel nucleic acids and peptides derived from open reading frame X,
PT   useful for treating e.g. cancers, proliferative disorders,
PT   neurodegenerative disorders and cardiovascular disease -
XX
PS   Claim 5; Page 3386-3390; 5507pp; English.
XX
CC   AAC74446 to AAC77606 encode the proteins given in AAB40237 to AAB43397,
CC   which represent the human ORFX open reading frames 1 to 3161. The ORFX
CC   sequences have activities such as: cytostatic; hepatotropic; vulnerary;
CC   antipsoriatic; antiparkinsonian; nootropic; neuroprotective;
CC   osteopathic; anticonvulsant; antiarthritic; immunosuppressant;
CC   immunostimulant; cardiant; thrombolytic; coagulant; vasotropic;

CC   antidiabetic; hypotensive; dermatological; immunosuppressive;
CC   antiinflammatory; antibacterial; antiviral; antifungal; antirheumatic;
CC   antithyroid; and antianaemic. The sequences can be used for determining
CC   the presence of or predisposition to, or preventing or treating
CC   pathological conditions associated with an ORFX-associated disorder. The
CC   nucleic acids can be used to express ORFX proteins in gene therapy
CC   vectors. The proteins and nucleic acids may be used to treat cancers,
CC   proliferative disorders, neurodegenerative disorders, osteoarthritis,
CC   graft vs host disease, cardiovascular disease, diabetes mellitus,
CC   hypertension, hypothyroidism, cholesterol ester storage, systemic lupus
CC   erythematosus, severe combined immunodeficiency (SCID), AIDS, viral,
CC   bacterial or fungal infection, malaria, autoimmune disorders, asthma,
CC   allergies, aplastic anaemia, burns, wounds, bone and cartilage damage,
CC   nocturnal haemoglobinuria, antiinflammatory disease; to enhance
CC   coagulation; to inhibit thrombosis; and as a contraceptive.
XX
SQ   Sequence 6439 BP; 1721 A; 1568 C; 1498 G; 1652 T; 0 other;

```
Query Match             94.78%;    Score 1468.8;  DB 21;  Length 6439;
Best Local Similarity   97.78%;    Pred. No. 0;
Matches  1524;  Conservative    0;  Mismatches   27;  Indels    9;  Gaps    3;

Qy      1  ATGGATGCTGACGAGGTCAAGACACATGTCTTTCTCATCAGGGAAGGAAGGAGAAGCCCCCCTGTA   60
           |||||||||||| ||| ||||||||| ||  |   |  |||||| |||| | |||||||||| |
Db    169  atggatgctgatgagggtcaagacatgtccaagttcaggggaggaaagcccccctgta   228

Qy     61  AGCGGATACTCCAGATGAGGGCGATGAGCCCATGCCAGGGACCTCTCCACCACC   120
           || ||||||||||||||||||||||||||||||||| ||||||||||||||||||
Db    229  agcgatactccagatgagggcgatgagcccatgcccgaggacctctccaccacc   288

Qy    121  TCGGGAGGACAGCAAAGCTCCAAGAGTCGACAGAGTCGTGGCCAGTAATGTTAAAGTAGAG   180
           |||||||||||||||||| |||||||| |||||||||||||||||||||||||||||||||
Db    289  tcgggaggacagcaaagcttccaagagtgacagagtcgtggccagtaatgttaaagtagag   348

Qy    181  ACTCAGAGTGATGATGAAGAGAATGGCGTGCTGCCTGTGAAAATGAATGGGGAAGAATGTGCGGAG   240
           ||||||||||||| |||||||||||| ||| ||| ||||||   ||||||| |||||||||||||||
Db    349  actcagagtgatgaagagaatgggcgtgcctgtgaatgaatgatgggaagaatgtgcggag   408

Qy    241  GATTTACGAAATGCTTGATGCCTCGGGAGAGAAAAATGAATGGCTCCCAGGGACCAAGGC   300
           |||||||||| |||| ||||||||||||||| |||||||||||||||||| |||||||||
Db    409  gatttacgaatgctgatgcctcgggaggagaaaatgaatggctcccacagggaccaaggc   468

Qy    301  AGCTCGGCTTGTCGGGAGTTGGAGGCATTCGACTTCCTAACGGAAAACTAAAGTGTGAT   360
           ||||||||||||||||| |||||||||||||||||||||||||||||||||||||||||
Db    469  agctcggcttgtcgggagttggaggcattcgacttcctaacggaaaactaaagtgtgat   528

Qy    361  ATCTGTGGGATCATTGCATCGGGCCCCAAATGTGCTCATGGTTCACAAAAGAAGCCACACT   420
           |||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db    529  atctgtgggatcatttgcatcgggccccaaatgtgctcatggttcacaaaagaagccacact   588

Qy    421  GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGGCAACCTG   480
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    589  ggagaacggcccttccagtgcaatcagtgcggggcctcattcacccagaagggcaacctg   648

Qy    481  CTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTCTGCAACTAC   540
           |||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
Db    649  ctccggcacatcaagctgcattccgggggagaagcccttcaaatgccacctctgcaactac   708

Qy    541  GCCTGCCGCCGGAGGACGCCCTCACTGGCCACCTGAGGACGCCACTCCGTTGTAAACCT   600
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    709  gcctgccgccggaggacgccctcactggccacctgaggacgccactccgttgtaaacct   768

Qy    601  CACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCCAACGTCTTTAGAGAACATAAA   660
           |||||| ||||||||||||||||||||||||||||| ||  || || |||||||||||||
Db    769  cacaaatggatattgtggccgaagctataaacagcgaagctataaacagcataaa   828

Qy    661  GAGCGCTGCCACAACTACTTGGAAAGCATGGCCTTCCGGCCACACTGTACCCAGTCATT   720
           ||||||||||||||||||||||||||||||| |||||||||||||||||||| |||||||
Db    829  gagcgctgccacaactacttggaaagcatgggccttccggccacactgtaccagtcatt   888

Qy    721  AAAGAAGAAACTAAGCACAGTGAAAATGGCAGAAGACCTGTGCAAGATAGGATCAGAGAGA   780
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db    889 aaagagagaactaatcacagtgaaatggcagaagaccctgtgcaagataggatcagagaga 948
Qy    781 TCTCTCGTGCTGGACAGACTAGCAAGTAATGTCCCAAACGTAGAGCTTATGCCTCAG     840
          |||||||||||||||||||||||||||| |||||||||||||  |||||||||||||
Db    949 tctctcgtgctggacagactagcaagtaacgtcgcccaaacgtaagagctcctatgcctcag 1008
Qy    841 AATTCTTGGGACAAGGGCCTGTCCGACACGCCCTACGA---CAGTGCCACGTACAG     897
          ||||||||||||||||||||||||||||||||||||||   |||  ||| ||||||
Db   1009 aaatttcttgggacaagggcctgtccgacacgcccagcagcgccagctacgag        1068
Qy    898 AAGGAGAACGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAACAACGCCATCAAC  957
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1069 aaggagaacgaaatgatgaagtcccacgtgatggaccaagccatcaacaacgccatcaac  1128
Qy    958 TACCTGGGGGCCGAGTCCCTGCGCCCCCTGGTGCAGACGCCCCCGGGCGGTTCCGAGGTG 1017
          ||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1129 tacctggggccgagtccctgcgccccctggtgcagacgcccccgggcggttccgaggtg   1188
Qy   1018 GTCCCGGTCATCAGCCCGATGTACCAGCTGCACA---GGCGCTCGGAGGGCACCCCGCGC 1074
          |||||||||||||||||||||||||||||||||    ||||||||||||||||| ||||
Db   1189 gtcccggtcatcagcccgatgtaccagctgcacaagccgctcggagggcacccccgc    1248
Qy   1075 TCCAACCACTCGGCCCAGGACACGCGCCGTGGAGTACCTGCTGCTCTCCAAGGCCAAG   1134
          ||||||||||||||||||||||||||||||||| ||||||||||||||||||||||||
Db   1249 tccaaccactcggcccaggacacgcgccgtggagaacctgctgctctccaaggccaag   1308
Qy   1135 TTGGTGCCCTCGGAGCGCGGAGGCGTCCCCGAGCAACAGCTGCCAAGACTCCACGGACACC 1194
          ||||||||||||||||||||||||||||||||||||||| |||| ||||||||||||||||
Db   1309 ttggtgccctcggagcgcggaggcgtccccgagcaacagctgtcaagactccacggacacc 1368
Qy   1195 GAGAGCAACAACGAGGAGGAGCAGCCGCCGGTCTTATCTACCTGACCAACCACATCGCCCGA 1254
          |||||||||||||||||||||||||||||| ||| |||||||||||||||||||||||||
Db   1369 gagagcaacaacgaggaggagcagccgcggtctccatctacctgaccaaccacatcgccccg 1428
Qy   1255 CGCGCGC---AACGCGTCCTCAAGGAGGAGCACCGGCCGCCTACGACCTGCTGCGCGCC   1311
          | |||||    ||| | |||||||||||||||||| ||||||||||||||||||||||||
Db   1429 cacgcgcgcaacggcttgtcgctcaaggaggagcaccgccgcctacgacctgctgcgcgcc 1488
Qy   1312 GCCTCCCAGAACTCGGCAGGACGGCGCTCCGCCGTGGTCAGGCAGACCAGCGGGGAGCAGATGAAG 1371
          ||||||  ||||||||| |||||||||||||||||||||| |||||||||||||||||||||||||
Db   1489 gcctccgagaactcggacggcgctccgccgtggtcagcaccagcgggggagcagatgaag  1548
Qy   1372 GTGTACAAGTGCGAAACACTGCGCGGGTCTCTTCCTGGATCACGTCATGTACACCCATCAC 1431
          |||||||||||||||||| ||||||||| ||||||||||||||||||||||||||| ||||
Db   1549 gtgtacaagtgcgaaactgcgcgggtgctcttcctggatcacgtcatgtacaccatccac  1608
Qy   1432 ATGGGCTGCCACGGCTTCCGTGATCCTTTGAGTGCAACATGTGCGGCTACCAGCCAG    1491
          ||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
Db   1609 atgggctgccacggcttccgtgatcctttgagtgcaacatgtgcggctaccagccag    1668
Qy   1492 GACCGGTACGAGTTGCTGCTCGCCACATAACGCGAGGGGAGCACCGCTTCCACATGAGCTAA 1551
          |||||||||||| | | |||||||||||||||||||||||||||| ||||||||||||||||
Db   1669 gaccggtacgagttctcgtcgcacataacgcgagggggagcacccgcttccacatgagctaa 1728
```

```
Query Match             89.4%;  Score 1386;  DB 17;  Length 1386;
Best Local Similarity   100.0%;  Pred. No. 3.3e-301;
Matches 1386;  Conservative   0;  Mismatches   0;  Indels   0;  Gaps   0;

Qy    166 AATGTTAAAGTAGAGACTCAGATGATGAAGAATGGGCGTGCCTGTGAAATGAATGAATGGG 225
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 aatgttaaagtagagactcagatgatgaagaatgggcgtgcctgtgaaatgaatgaatggg 60

Qy    226 GAAGAATGTGCGGAGGATTTACGAATGCTTGATGCTCTCGGGAGAGAAAATGAATGGCTCC 285
          ||||||||||||||||||||||||||||||||| |||||||||||||||||||||||||||
Db     61 gaggaatgtgcggaggatttacgaatgcttgatgcctctcgggagagaaaatgaatggctcc 120

Qy    286 CACAGGGACCAAGGCAGCTCGGCTTGTCGGGAGTTGGAGGCATTCGACTTCCTAACGGA   345
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    121 cacagggaccaaggcagctcggctttgtcgggagttggaggcattcgacttcctaacgga   180

Qy    346 AAACTAAAGTGTGATATCTGTGGGATCATTCGCATCGGGCCCCAATGTGCTCATCGTCAC  405
          ||||||||||||||||| |||||||||||| | ||||||||||||||||||||||||||
Db    181 aaactaaagtgtgatcgtgggatcatttcgatcgggcccaatgtgctcatcgtcac     240

Qy    406 AAAAGAAGCCACACTGGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCCTCATTCACC 465
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db   241 aaagaagccacactgagagaacggccctccagtgcaatcagtcgggggcctcattcacc  300

Qy   466 CAGAAGGGCAACCTGCTCCGGCACATCAAGCTGCATTCCGGGGAGAGAGCCCTTCAAATGC 525
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   301 cagaagggcaacctgctccggcacatcaagctgcattccgggggagagagcccttcaaatgc 360

Qy   526 CACCTCTGCAACTACGCCTGCCGCCGGAGGACGACCCTCACTGGCCACCTGAGGACGCAC  585
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   361 cacctctgcaactacgcctgccgccggaggacgacccctcactggccacctgaggacgcac 420

Qy   586 TCCGTTGGTAAACCTCACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAACGTCT  645
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   421 tccgttggtaaacctcacaaatgtggatattgtggccgaagctataaacagcgaacgtct  480

Qy   646 TTAGAGGAACATAAAGAGCGCTGCCACAACTACTTGAAAGCATGGCCTTCCGGCCACA    705
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   481 ttagaggaacataaagagcgctgccacaactacttgaaagcatggccttccgggccaca  540

Qy   706 CTGTACCCAGTCATTAAAGAGAGAACTAAGCACAGTGAAAATGGCAGAAGACCTGTGCAAG 765
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   541 ctgtacccagtcattaaagagagaactaagcacagtgaaaatggcagaagacctgtgcaag 600

Qy   766 ATAGGATCAGAGAGATCTCTGTGCTGGACAGACTAGCAAGTAATGTCGCCAAACGTAAG   825
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   601 ataggatcagagagatctctgtgctggacagactagcaagtaatgtcgccaaacgtaag  660

Qy   826 AGCTCTATGCCTCAGAAATTTCTTGGGACAAGGGCCTGTCCGACACGCCCTACGACAGT   885
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   661 agctctatgcctcagaaatttcttgggacaagggcctgtccgacacgccctacgacagt  720

Qy   886 GCCACGTACGACAGAAGGAGGAGAACGAAATGATGAAGTCCCACGTGATGGACCATCAAC  945
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   721 gccacgtacgagaggaggagaacgaaatgatgaagtcccacgtgatggaccaagccatcaac 780

Qy   946 AACGCCATCAACTACCTGGGGGCCGAGTCCTGCGCCCCGCCGGTGCAGACGCCCCCGGGC 1005
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   781 aacgccatcaactacctggggggccgagtcctgcgccccgccggtgcagacgcccccgggc  840

Qy  1006 GGTTCCGAGTGGTCCCGTCATCAGCCCGATGTACCAGCTGCCACAGGCGCCTCGGAGGGC 1065
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   841 ggttccgagtggtcccgtcatcagcccgatgtaccagctgccacaggcgcctcggagggc  900

Qy  1066 ACCCCGGCTCCAACCACTCGGCCCCAGGACAGCAGCGCCGTGAGTACCTGCTGCTCTCC  1125
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   901 accccggctccaaccactcggccccaggacagcagcgccgtgagtacctgctgctctcc   960

Qy  1126 AAGGCCAAGTTGGTGCCCTCGGAGCGCCAGCGCAGCCGAGGCGTCCCCGAGCAACAGCTGCCAAGACTCC 1185
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   961 aaggccaagttggtgccctcggagcgccagcgcagccgaggcgtcccccgagcaacagctgccaagactcc 1020

Qy  1186 ACGGACACCACCGAGAGCAACAACGAGGAGGAGCAGCCGAGCCGGTCTTCATCTACCTGACCAACCAC 1245
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1021 acggacaccaccgagagcaacaacgaggaggagcagccgagccggtcttcatctacctgaccaaccac 1080

Qy  1246 ATCGCCCCAGCGGCCGCAACGCGTGTCCCTCAAGGAGGAGCACCGCGCCTACGACCTGCTG 1305
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1081 atcgcccagcgcggcgcaacgcgtgtcgctcaaggaggagcaccgcgcctacgacctgctg 1140

Qy  1306 CGGCCGCCTCCAGGAACTCCGCAGGACGCGCTCCGCCTGGTCAGCACCGCGGGGAGCAG 1365
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1141 cgcccgcctccagggactccgcaggacgcgctcagcctggtcagcaccagcggggagcag 1200

Qy  1366 ATGAAGGTGTACAAGCTGCGAACACTGCCGCGGTGCTTCCGGTCGATCACGTCATGTACACC 1425
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1201 atgaaggtgtacaagctgcgaacactgccgcggtgctcttcctgatcacgtcatgtacacc 1260

Qy  1426 ATCCACATGGGCTGCCACGCGTTCCGTGATCCTTTGAGTGCAACATGTCGGCTACCAC  1485
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1261 atccacatgggcgtgccacgcgttcggtgatccttttgagtgcaacatgtcggctaccac 1320

Qy  1486 AGCCAGGACCGGTACGAGTTCTCGTCGCACATAACGCGAGGGGAGCACCGCTTCCACATG 1545
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1321 agccaggaccggtacgagttctcgtcgcacataacgcgaggggagcaccgcttccacatg 1380

Qy  1546 AGCTAA 1551
         ||||||
Db  1381 agctaa 1386
```

RESULT 4
AAV66969
ID   AAV66969 standard; cDNA; 1386 BP.
XX
AC   AAV66969;
XX
DT   14-JAN-1999 (first entry)
XX
DE   Human Ikaros encoding cDNA.
XX
KW   CD3-delta gene; Ikaros gene; T cell; progenitor stem cell; leukaemia;
KW   differentiation marker; immune system; corpus striatum; AIDS;
KW   Alzheimer's disease; ss.
XX
OS   Homo sapiens.
XX
FH   Key   Location/Qualifiers
FT   CDS   1..1386
FT   /*tag= a
FT   /product= "Ikaros"
XX
PN   US5824770-A.
XX
PD   20-OCT-1998.
XX
PF   05-JUN-1995; 95US-0465590.
XX
PR   02-MAY-1994; 94US-0238212.
PR   14-SEP-1992; 92US-0946233.
PR   14-SEP-1993; 93US-0121438.
PR   05-JUN-1995; 95US-0465590.
XX
PA   (GEHO) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1998-582621/49.
DR   P-PSDB; AAW72672..
XX
PT   Ikaros poly:peptide(s) - useful for treating disorders of immune
PT   system or corpus striatum
XX
PS   Disclosure; Column 55-58; 11pp; English.
XX
CC   The present invention describes a purified peptide having at least one
CC   of the following properties:(a) it stimulates transcription of a DNA
CC   sequence under the control of a delta A element, an NFKB element or an
CC   Ikaros binding oligonucleotide consensus sequence; (b) it binds to any of
CC   a delta A element, an NFKB element or an Ikaros binding oligonucleotide
CC   consensus sequence; (c) it competitively inhibits the binding of a
CC   naturally occurring Ikaros isoform to any of a delta A element, an NFKB
CC   element or an Ikaros binding oligonucleotide consensus sequence; (d) it
CC   competitively inhibits Ikaros binding to Ikaros responsive elements; or
CC   (e) it inhibits protein-protein interactions of transcriptional complexes
CC   formed with naturally occurring Ikaros isoforms. The proteins, provided
CC   that they stimulate gene transcription under the control of delta A
CC   elements, NFKB elements and/or Ikaros-binding oligonucleotides, bind to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides,
CC   competitively inhibit binding of naturally occurring Ikaros isoforms to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides,
CC   competitively inhibit Ikaros binding to Ikaros-responsive elements and/or
CC   inhibit protein-protein interactions of transcriptional complexes with
CC   naturally occurring Ikaros isoforms, can be used to treat immune system
CC   disorders, e.g. leukaemia or AIDS, or corpus striatum disorders, e.g.
CC   Alzheimer's disease. The present sequence encodes a specifically
CC   claimed human Ikaros protein.
XX

```
SQ      Sequence 1386 BP; 350 A; 403 C; 395 G; 238 T; 0 other;

Query Match             89.4%;  Score 1386;  DB 19;  Length 1386;
Best Local Similarity   100.0%;  Pred. No. 3.3e-301;
Matches 1386;  Conservative   0;  Mismatches   0;  Indels   0;  Gaps   0;

Qy   166 AATGTTAAAGTAGAGACTCAGAGTGATGAAGAGAATGGGCGTGCCTGTGAAATGAATGGG 225
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     1 aatgttaaagtagagactcagagtgatgaagagaatgggcgtgcctgtgaaatgaatggg 60

Qy   226 GAAGAATGCGCGAGGATTTACGAATGCTTGATGCCTCGGGAGAGAAAATGAATGGCTCC 285
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    61 gaagaatgcgcggaggatttacgaatgcttgatgcctcgggagagaaaatgaatggctcc 120

Qy   286 CACAGGACCAAGGCAGCTCGGCTTTGTCGGGAGTTGGAGGCATTCGACTTCCTAACGGA 345
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   121 cacaggaccaaggcagctcggctttgtcgggagttggaggcattcgacttcctaacgga 180

Qy   346 AAACTAAAGTGTGATATCTGTGGATCATTCATCGGCCCCAATCTGCTCATGGTTCAC 405
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   181 aaactaaagtgtgatatctgtgggatcatttgcatcggccccaatctgctcatggttcac 240

Qy   406 AAAGAAGCCACACTGAGAAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACC 465
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   241 aaagaagccacactgagaaacggcccttccagtgcaatcagtgcggggcctcattcacc 300

Qy   466 CAGAAGGGGCAACCTGCTCGGCGACATCAAGCTGCATTCCGGGGAGAGCCCTTCAAATGC 525
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   301 cagaagggggcaacctgctcggcgacatcaagctgcattccggggagagcccttcaaatgc 360

Qy   526 CACCTCTGCAACTACGCCTGCGCCGAGGGACGACCCTCACTGGCCACCTGAGGACGCAC 585
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   361 cacctctgcaactacgcctgcgccgaggggacgaccctcactggccacctgaggacgcac 420

Qy   586 TCCGTTGGTAAAACCTTCACAAAATGTGGATATTGTGGCCGAAGCTATAAACACGCTCT 645
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   421 tccgttggtaaaacctttcacaaaatgtggccgaagctataaacagcgaacgtct 480

Qy   646 TTAGAGGAACATAAAGAGCCGTGCCACAACTACTTGAAAAGCATGATGGCCTTCCGGGCACA 705
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   481 ttagaggaacataaagagccgtgccacaactacttggaaaagcatgatggcctttccgggcaca 540

Qy   706 CTGTACCCAGTCATTAAAGAAGAAAACTAAGCACAGTGAAAATGGCAGAAGACCTGTCAAG 765
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   541 ctgtacccagtcattaaagaagaaaactaagcacagtgaaaatggcagaagacctgtgcaag 600

Qy   766 ATAGGATCAGAGAGATCTCGTGCTGACAGCTAGCAGTTGCGCCAAAGTAAG 825
          ||||||||||||||||||||||||||||||||||||||||||||||||||
Db   601 ataggatcagagagatctctcgtgctggacagactagcaagtaatgtgcgccaaacgtaag 660

Qy   826 AGCTCTTATGCCTCAGAAATTTCTTGGGGACAAGGGCCTTGTCCGACACGCCCTACGACAGT 885
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   661 agctctatgcctcagaaattctttgggggacaagggcctgtccgacacgcccctacgacagt 720

Qy   886 GCCACGTACGGAGAAGGAGAACGAAAATGATGATGAAGTCCCACGTGATTGGACCAAGCCATCAAC 945
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   721 gccacgtacggagaaggagaacgaaaatgatgatgaagtcccacgtgatggaccaagccatcaac 780

Qy   946 AACGCCATCAACTAACTGGGGGCCGAGTCCCTGCCCCGCTGGTCGCAGACGCCCCCGGGC 1005
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   781 aacgccatcaactaactgggggccgagtccctgcgcctgcgcccgctggtgcagacgcccccgggc 840

Qy  1006 GGTTCCGAGGTGGTCCCGGTCATCAGCCCGATGTACCACCAGGGCTGCCAGGGGC 1065
          |||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   841 ggttccgaggtggtcccggtcatcagcccgatgtaccaccagggctgccagggaggc 900

Qy  1066 ACCCCGCCGCCTCCAACCACTCGGCCCAGGACACCGCCGCGCGGCTACCTGCTGCTCTCC 1125
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   901 acccccgccgcctccaaccactcggcccaaggacagcgccgcgcggctacctgctgctctcc 960

Qy  1126 AAGGCCAAGTTGGTGCCCTCGGACGCGGAGCGGCGTCCCCGAGCAACAGCTGCCAAGACTCC 1185
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   961 aaggcaagttggtgccctccggacgcgaggcgtccccgagcaacagcgtgccaagactcc 1020

Qy  1186 ACGGACACCGAGAGCAACAACGAGGAGCAGCAGCCGCAGCCGGTCTTATCTACCTGACCAACCAC 1245
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1021 acggacaccgagagcaacaacgaggagcagcagccgcagccggtcttatctacctgaccaaccac 1080

Qy  1246 ATCGCCCGACGCGGCGCAACGCGTGTCGCTCAAGGAGGAGCACCGGCCTACGACCTGCTG 1305
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1081 atcgcccgacgcggcgcaacgcgtgtcgctcaaggaggagcaccggccctacgacctgctg 1140

Qy  1306 CGCGGCCGCCTCCGAGAACTCGCAGGACGCGGCCTCCGCTGGTCAGCGACCGGGGAGCAG 1365
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1141 cgcgccgcctccgagaactcgcaggacgcggcctccgctggtcagcgaccgggggagcag 1200

Qy  1366 ATGAAGGTGTACAAGTGCGAACACTGCCGGGTGCTCTTCCTGGATCACGTCATGTACACC 1425
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1201 atgaaggtgtacaagtgcgaacactgccgggtgctcttcctggatcacgtcatgtacacc 1260

Qy  1426 ATCCACATGGCTGCCACGCGTTCCGTGATCCTTTTGAGTGCAACATGTGCGGCTACCAC 1485
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1261 atccacatgggctgccacgcgttccgtgatcctttgagtgcaacatgtgcggctaccac 1320

Qy  1486 AGCCAGGACGCGGTACGAGTTCTCGTCCACATAACCGAGGGGAGCACCGCTTCCACATG 1545
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  1321 agccaggaccggtacgagttctcgtcgcacataaccgagggggagcaccgcttccacatg 1380

Qy  1546 AGCTAA 1551
          ||||||
Db  1381 agctaa 1386
```

```
RESULT   5
AAQ44980
ID   AAQ44980 standard; cDNA; 1611 BP.
XX
AC   AAQ44980;
XX
DT   21-OCT-1994 (first entry)
XX
DE   Human Ikaros peptide coding sequence.
XX
KW   Ikaros; zinc finger; protein; immune disorder; therapy; treatment;
KW   corpus striatum; regulatory gene; ss.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   CDS             1..1611
FT                   /*tag=  a
FT                   /product= Peptide with Ikaros activity.
XX
PN   WO9406814-A.
XX
PD   31-MAR-1994.
XX
PF   14-SEP-1993;  93WO-US08743.
XX
PR   14-SEP-1992;  92US-0946233.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1994-118387/14.
DR   P-PSDB; AAR46964.
XX
PT   T-cell pathway regulatory gene, Ikaros - encodes family of unique
PT   zinc finger proteins, useful for treating immune system disorders
XX
PS   Claim 13; Page 44-46; 112pp; English.
XX
CC   The Ikaros gene encodes a zinc finger protein which can be used in a
CC   therapeutic composition to treat animals with an immune system
```

```
CC   disorder. It may also be used for assessing whether a subject is at
CC   risk for an immune disorder. It is of particular use in treating a
CC   disorder of the corpus striatum.
XX
SQ   Sequence 1611 BP; 375 A; 484 C; 480 G; 272 T; 0 other;

Query Match          89.1%;     Score 1382.4; DB 15; Length 1611;
Best Local Similarity
Matches 1386;   Conservative 99.6%;  Pred. No. 2.2e-300;
                Mismatches   0;  Indels  0;  Gaps  0;

Qy    160 GCCAGTAATGTTAAAGTAGAGACTCAGAGTGATGAAGAGAGAATGGGCGTGCCTGTGAAATG 219
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    217 gccagtaatgttaaagtagagactcagagtgatgaagagagaatgggcgtgcctgtgaaatg 276

Qy    220 AATGGGGAAGAATGTGCGGAGGATTTACGAATGCTTGATGCCTTCCGGAGAGAAAATGAAT 279
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    277 aatggggaagaatgtgcggaggatttacgaatgcttgatgccttccggagagaaaatgaat 336

Qy    280 GGCTCCCACAGGACCAAGGCACCAGCTCGGCTTGTCGGGAGTTGGAGGCATTCGACTTCCT 339
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    337 ggctcccacagggaccaaggcaccagctcggcttgtcgggagttggaggcattcgacttcct 396

Qy    340 AACGGAAAACTAAAGTGTGATATCTGTGGGATCATTTCATCGGCCCAATGTGCTCATG 399
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    397 aacggaaaactaaagtgtgatatctgtgggatcatttcatcggcccaatgtgctcatg 456

Qy    400 GTTCACAAAAGAACGCCACTGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCA 459
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    457 gttcacaaaagaagccacctgagaacggcccttccagtgcaatcagtgcggggcctca 516

Qy    460 TTCACCCGAAGGGCAACCTGCTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTC 519
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    517 ttcacccgaagggcaacctgctccggcacatcaagctgcattccggggagaagcccttc 576

Qy    520 AAATGCCACCTCTGCAACTACGCCTGCGCCGGAGGACGCCCCTCACTGCCCACCTGAGG 579
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    577 aaatgccacctctgcaactacgcctgcgccggaggacgcccctcactgcccacctgagg 636

Qy    580 ACGCACTCCGTTGGTAAACCTCACAAATGTGATATTGTGGCCGAAGCTATAAACAGGCA 639
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    637 acgcactccgttggtaaacctcacaaatgtgatattgtggccgaagctataaacagcga 696

Qy    640 ACGTCTTTAGAGGAACATAAAGAGCGCTGCCACAACTACTTGAAAAGCTACATGGGCCTTCCG 699
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    697 acgtctttagaggaacataaagagcgctgccacaactacttggaaagcatgggccttccg 756

Qy    700 GGCACACTGTACCCAGTGCATTAAGAAGAAACTAAGCACAGTGAAATGGCAGAAGACCTG 759
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    757 ggcacactgtacccagtgcattaagaagaaactaagcacagtgaaatggcagaagacctg 816

Qy    760 TGCAAGATAGGATCAGAGAGATCTCTCGTTGCTGGCGACACTAGCAAGTAATGTCGCCAAA 819
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    817 tgcaagataggatcagagagatctctcgttgctggcgacactagcaagtaatgtcgccaa 876

Qy    820 CGTAAGAGCTTCTATGCCTCAGAAATTTCTTGGGGACAAGGGCCGTGTCCGACACGCCCTAC 879
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    877 cgtaagagctctatgcctccagaaattcttggggacaagggccgtgtccgacacgccctac 936

Qy    880 GACAGTGCCACGTACGAGAAGGAGAACAACCGAAATGATGAAGTCCCACGTGATGGACCAAGCC 939
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    937 gacagtgccacgtacgagaaggagagaggagaacaacgaaatgatgaagtcccacgtgatggaccaagcc 996

Qy    940 ATCAACAACGCCATCAACTCACCTGGGGCCCAGAGTCCCTGGTTGCAGACGCCC 999
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    997 atcaacaacgccatcaactcacctgggggccccgagtccctgcgttgcagacgccc 1056

Qy   1000 CCGGGCGGTTCCGAGGTGTCCGGTCATCAGCCCCGATGTACCACCCGCTCG 1059
          |||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1057 ccgggcggttccgaggtggtcccggtcatcagcccgatgtaccaccggctcg 1116

Qy   1060 GAGGGCACCCCCGCTCCAACCACTCGGCCCCCAGGACAGCCCGCGTGGTACCTGCTG 1119
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||


Db   1117 gagggcacccccggctccaaccactcggcccccaggacagcgccgtggagtacctgctgctg 1176
Qy   1120 CTCTCCAAGGCCAAGTTGGTGCCCTCCGGAGCGCCGAGGCGTCCCGAGCAACAGCGTGCCAA 1179
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1177 ctctccaaggccaagttggtgccctccggagcgccgaggcgtcccgagcaacagcgtgccaa 1236
Qy   1180 GACTCCACGGACACCGGAGAGCACACGAGAGCAGAGGCAGGCGTCTTATCACCTGACC 1239
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1237 gactccacggacaccggaggagcacacgagagcagaggcaggcgtcttatctacctgacc 1296
Qy   1240 AACCACATCGCCCGACGCGCGCCAACGCGTGCGTCGCTCAAGGAGGAGCACCGGCCTACGAC 1299
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1297 aaccacatcgcccgacgcgcgccaacgcgtcgctcaaggaggagcaccggccctacgac 1356
Qy   1300 CTGCTGCGCGCCGCCTCCGAGAACTCGAGGACGCGCCTCCGGCTCCGGCTTGTCAGCACCAGCGGG 1359
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1357 ctcgtgcgcggccgcctccgagaactcgcaggacgcggccgttccgcgttcgcgtggtcagcaccagcggg 1416
Qy   1360 GAGCAGCAGATGAAGGTGTACAAGTGCAACACTGCCGAACACTGCCGGGTGCTCTTCCTGGATCACGTCATG 1419
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1417 gagcagatgaaggtgtacaagtgcaacactgccggcgtctcttcctggatcacgtcatg 1476
Qy   1420 TACACCCATCCACATGGGCTGCCACGGCTTCCGTGATCCTTTGAGTGCAACATGTGCGGGC 1479
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1477 tacaccatccacatgggctgccacggcttccgtgatcctttgagtgcaacatgtgcgggc 1536
Qy   1480 TACCAGCCAGGACCGGTACGAGTTCTCGTCGCCACATAACGCCGAGGGGAGCACCGGCTTC 1539
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1537 taccagccaggaccggtacgagttctcgtcgcccacataacgccgaggggagcaccggcttc 1596
Qy   1540 CACATGAGCTAA 1551
          ||||||||||||
Db   1597 cacatgagctaa 1608
```

```
RESULT  6
AAV42806
ID   AAV42806 standard; cDNA; 1386 BP.
XX
AC   AAV42806;
XX
DT   11-JAN-1999 (first entry)
XX
DE   Human Ikaros isoform hIk-1 cDNA.
XX
KW   Ikaros; hIK-1; transcription factor; human; lymphocyte;
KW   cell differentiation; T cell; cancer; immunodeficiency;
KW   Alzheimer's disease; therapy; diagnosis; ss.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   exon            1..255
FT                   /*tag=   a
FT   exon            256..423
FT                   /number= Ex3
FT                   /*tag=   b
FT   exon            424..549
FT                   /number= Ex4
FT                   /*tag=   c
FT   exon            550..684
FT                   /number= Ex5
FT                   /*tag=   d
FT   exon            685..1386
FT                   /number= Ex6
FT                   /*tag=   e
FT                   /number= Ex7
XX
PN   CA2194256-A.
XX
PD   05-MAR-1998.
XX
PF   02-JAN-1997; 97CA-2194256.
```

```
XX
PR   05-SEP-1996;   96US-0711417.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1998-378292/33.
DR   P-PSDB; AAW70964.
XX
PT   New nucleic acid encoding Ikaros protein involved in early
PT   differentiation of lymphocytes - existing in several isoforms, and
PT   related products, used to treat e.g. immune diseases or cancer and
PT   to control cell differentiation
XX
PS   Claim 7; Page 70-72; 158pp; English.
XX
CC   This is the nucleotide of human Ikaros cDNA (isoform hIk-1) that
CC   codes for a 461-amino acid zinc finger protein (see AAW70964) that is
CC   involved in the early differentiation of lymphocytes.  It was
CC   isolated from a Jurkat T cell line library using mouse Ikaros exon
CC   7 cDNA as probe.  The Ikaros gene maps between p11.2-p13 on human
CC   chromosome 7.  The human and murine Ikaros sequences (see AAV42805-11
CC   and AAV42840) are highly conserved.  Differential splicing of Ikaros
CC   gene transcripts gives rise to different Ikaros protein isoforms.
CC   The invention provides Ikaros nucleic acids, vectors and host cells
CC   expressing Ikaros proteins.  These are used to treat T and B cell
CC   diseases (e.g. immune deficiencies caused by drugs, radiation or
CC   cancers), to control expression of heterologous genes placed under
CC   control of an Ikaros-responsive element, to treat nervous system
CC   diseases (e.g. Alzheimer's disease) and to modulate cell division,
CC   amplification or differentiation, especially in haematopoietic
CC   cells.  Some Ikaros isoforms are antagonistic of others and may be
CC   used to inhibit interaction with DNA sequences.  The same effect
CC   can be achieved with Ikaros-binding oligonucleotides.  Examining
CC   the expression of the Ikaros gene, or its allelic structure, can be
CC   used to assess risk of acquiring the above diseases.
XX
SQ   Sequence 1386 BP; 352 A; 403 C; 397 G; 234 T; 0 other;

Query Match             88.9%;  Score 1379.6;  DB 19;  Length 1386;
Best Local Similarity   99.7%;  Pred. No. 8.9e-300;
Matches 1382;        Conservative   0;  Mismatches   4;  Indels   0;  Gaps   0;

Qy    166 AATCTTAAAGTAGAGACTCAGAGTGATGAAGAGAATGGGCGGCCTGCCTGAAATGAATGGG 225
          ||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 aatgttaaagtagagactcagagtgatgaagagaatgggcggcctgcctgaaatgaatggg 60

Qy    226 GAAGAAATGTGCGGAGGAGATTACGAATGCTTGATGCCTCGGGAGAGAAAATGAATGGCTCC 285
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     61 gaagaaatgtgcggaggagattacgaatgcttgatgcctcgggagagaaaatgaatggctcc 120

Qy    286 CACAGGGACCAAGGCAGCTCGGCGTTGTCGGGAGTTGAGGCATTCGACTTCCTAACGGA 345
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    121 cacagggaccaaggcagctcggcgttgtcgggagttgaggcattcgacttcctaacgga 180

Qy    346 AAACTAAAGTGTGATATCTGTGGGATCATTTGCATCGGGCCCAATGTGCTCATGGTTCAC 405
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    181 aaactaaagtgtgatatctgtgggatcatttgcatcgggcccaatgtgctcatggttcac 240

Qy    406 AAAAGAAGCCACACTGGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACC 465
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    241 aaaagaagccacactggagaacggcccttccagtgcaatcagtgcggggcctcattcacc 300

Qy    466 CAGAAGGGCAACCTGCTTCCGGCACATCAAGCTGCATTCCGGGAGGAGAAGCCCTTCAAATGC 525
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    301 cagaagggcaacctgcttccggcacatcaagctgcattccgggaggagaagcccttcaaatgc 360

Qy    526 CACCTCTGCAACTACACGCCTGCCGCCGGAGGACGCCCTCACTGGCCACTGAGGCACCGCAC 585
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    361 cacctctgcaactacacgcctgccgccggaggacgccctcactggccactgaggcaccgcac 420

Qy    586 TCCGTTGGTAAACCTCACAAATGTGGATATTGTGCCGAAGCTATAAACAGCGAACGTCT 645
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    421 tccgttggtaaacctcacaaatgtggatattgtgccgaagctataaacagcgaacgtct 480

Qy    646 TTAGAGGAACATAAAGACGCTGCCACAACTACTTGGAAAGCATGGCCTTCCGGCACA 705
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    481 ttagaggaacataaagacgctgccacaactacttggaaagcatggccttccggcaca 540

Qy    706 CTGTACCCAGTCATTAAAGAACAAACTAAGCACAGTGAAATGGCAGAAGACCTGTCAAG 765
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    541 ctgtacccagtcattaaagaacaaactaagcacagtgaaatggcagaagacctgtcaag 600

Qy    766 ATAGGATCAGAGAGATCTTCGTCTGCTGGACAGCTAGCAAGTAATGTCGCCAAACGTAAG 825
          |||||||||||||||| |||||||||||||||||||||||||||||||||||||||||||
Db    601 ataggatcagagagagatctctgctggacagctagcaagtaatgtcgccaaacgtaag 660

Qy    826 AGTCTATGCCTCAGAAATTTCTTGGGACAAGGGCCTGGCCGACACGCCCTACGACAGT 885
          || |||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    661 agctctatgcctcagaaatttcttgggacaagggcctggccgacacgccctacgacagt 720

Qy    886 GCCACGTACGAGAGGAGACGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAAC 945
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    721 gccacgtacgagaggaggacgaaatgatgaagtcccacgtgatggaccaagccatcaac 780

Qy    946 AAGGCCATCAAACTACCTGGGGGCCGAGTCCTCGCGCCTCGGTGCAGACGCCCCGGGC 1005
          || ||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    781 aacggccatcaaactactggggggccgagtcctcgcgcctcggtgcagacgcccccgggc 840

Qy   1006 GGTTCCGAGTGGTCCCGGTCATCGCCCGATGTACCAGCTGCACAGGCGCTCGGAGGGC 1065
          |||||||||||||| ||||||| ||||||||||||||||||||||||||||||||||||
Db    841 ggttccgagtggtggtccggtcatcagcccgatgtaccagctgcacaggcgctcggagggc 900

Qy   1066 ACCCCGGCTCCAACCACTCGGCCCAGGAGCAGCAGCCGTGGAGTACCTGCTGCTCTCC 1125
          ||||||| |||||||||||||||||||||||| ||||||||||||||||||||||||||
Db    901 acccggcgctccaaccactcggcccaggagcagcagcgccgtggagtacctgctgctctcc 960

Qy   1126 AAGGCCAAGTTGGTGCCCTCGGAGCCGGAGCGGCTCCCGGAGCAACAGCTGCCAAGACTCC 1185
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    961 aaggccaagttggtgccctcggagccggagcggcagcagcgcccgccagcaacagctgccaagactcc 1020

Qy   1186 ACGGACACCGAGAGCAACAACAGGAGGAGGAGCAGCGCAGCCGGTCTTATCTACCTGACCAACCAC 1245
          |||||||||||||||||||| |||||||||||||||||||||||||||||||||||||||||||||
Db   1021 acggacaccgagagcaacaacgaggaggaggagcagcgcagccggtcttatctcacctgaccaccac 1080

Qy   1246 ATCGCCCGACGCGCGCAACGCGTCGCCTCAAGGAGGAGCAGCCGGCCTTACGACCTGTG 1305
          |||||||||||||||||||||||||| ||||||||||||||||||||| |||||||||||
Db   1081 atcgcccgacgcgcgcaacgcgtcgctcaaggaggagcagccggcctgacgacctgctg 1140

Qy   1306 CGGGCCGCCTCCGAGAACTCGCAGGAGCGCGTCCGCGTTCAGCAGCGCGGAGCAG 1365
          ||| ||||||||||||||||||||||| ||| |||||||||||||||||||||||
Db   1141 cggcgccgcctccgagaactcgcaggacgcgcaggagcgcggggagcag 1200

Qy   1366 ATGAAGGTGTACAAGTGCAAGACTGCCAAACACTGCCGCGGTTGCTCTTCCTGGATCACGTCATGTACACC 1425
          ||||||||||||||||||||| |||||| |||||||||||||| |||||||||||||||||||||||||||
Db   1201 atgaaggtgtacaagtgcaagtgcgaacactgccgcggtgtctcttcctggatcacgtcatgtacacc 1260

Qy   1426 ATCCACATGGCTGCCACGGCCTTCCGTGATCCTTTGAGTGCAACATGTGCGCCTACCAC 1485
          ||||||||||||||||||||| |||||||||||| |||||||||||||||||| |||||
Db   1261 atccacatggctgccacggcctccgtgatccttttgagtgcaacatgtgcggctaccac 1320

Qy   1486 AGCCAGGACCCGTACGAGTTCTCGTCGCACATAACGCGGAGCACCGCTTCCACATG 1545
          |||||||||||||||||||||||||||||||||||| |||||||||||||| |||||
Db   1321 agccaggacccgtacgagttctcgtcgcacataacgcggagcaccgcttcccacatg 1380

Qy   1546 AGCTAA 1551
          ||||||
Db   1381 agctaa 1386

RESULT 7
AAT16062
ID   AAT16062 standard; cDNA; 2049 BP.
XX
```

```
AC    AAT16062;
XX
DT    09-MAY-1996  (first entry)
XX
DE    Murine Ikaros cDNA mIk-1.
XX
KW    Ikaros; transgene; transgenic animal; transgenic mouse; mIk-1;
KW    immunocomprised; immune system disorder; nervous system disorder;
KW    animal model; ss.
XX
OS    Mus musculus.
XX
FH    Key            Location/Qualifiers
FT    CDS            223..1779
FT                   /*tag= a
FT    exon           223..381
FT                   /*tag= b
FT    exon           382..642
FT                   /label= Exon-1/2
FT                   /*tag= c
FT    exon           643..810
FT                   /label= Exon-3
FT                   /*tag= d
FT    exon           811..933
FT                   /label= Exon-4
FT                   /*tag= e
FT    exon           934..1068
FT                   /label= Exon-5
FT                   /*tag= f
FT    exon           1069..1776
FT                   /label= Exon-6
FT                   /*tag= g
FT                   /label= Exon-7
XX
PN    WO9604372-A1.
XX
PD    15-FEB-1996.
XX
PF    28-JUL-1995;  95WO-US09345.
XX
PR    29-JUL-1994;  94US-0283300.
XX
PA    (GEHO )  GEN HOSPITAL CORP.
XX
PI    Georgopoulos K;
XX
DR    WPI; 1996-129389/13.
DR    P-PSDB; AAR92017.
XX
PT    Transgenic rodent having Ikaros trans-gene (pref. mutated)  - is
PT    severely immuno-compromised and can be used as model to determine
PT    effects of treatment for immune and nervous system disorders
XX
PS    Disclosure; Page 65-67; 102pp; English.
XX
CC    cDNA clones (AAT16059 and AAT16061-64) encode different isoforms,
CC    mIk-2, mIk-3, mIk-1, mIk-4 and mIk-5 (AAR92014 and AAR92016-19,
CC    respectively), of the mouse Ikaros protein, a master regulator of
CC    hematopoietic differentiation.  They were isolated from a mature
CC    T-cell line E-14 cDNA library.  The isoforms arise by differential
CC    splicing of the Ikaros genomic locus.  All include exons E1/2 and
CC    E7, but have different combinations of exons E3-E6 encoding a
CC    zinc finger domain.  Transgenic animals, pref. mice, having a
CC    mutated Ikaros transgene, esp. a mutation that alters the DNA
CC    binding domain of the Ikaros protein, are used as models to
CC    determine the effects of treatments for immune or nervous system
CC    disorders.
XX
SQ    Sequence 2049 BP; 514 A; 531 C; 574 G; 430 T; 0 other;

Query Match             75.7%;  Score 1174.8;  DB 17;  Length 2049;
Best Local Similarity   87.2%;  Pred. No. 7.8e-254;

Matches 1365;  Conservative   0;  Mismatches 177;  Indels  24;  Gaps   6;

Qy        1 ATGGATGCTGACGAGGTCAAGACACATGTCTTTCTCATCAGGGAGGAAGAAGCCCCTGTA  60
            ||||||| || |||||||| ||||||||||||||||
Db      223 atggatgtcgatgagggtcaagacacatgtcccaagtttcaggaaaggagagcccccagtc 282

Qy       61 AGGGATACTCCAGATGAGGGCGATGAGCCCCATGCCCATGCCCGAGGACCTCTCCACCACC 120
            |  ||  |||||||   |||| ||||||||||   ||| ||||||| |||| || |||
Db      283 agtgacactccagatgaagggatgagcccatgccctgtccctgagaccctgtcccactacc 342

Qy      121 TCGGGAGGACAGCAAAGCTCCAAGAGTCACAGAGTCGTGGCCAGTAATGTTAAAGTAGAG 180
            || |||  |||||| || |||||||||  ||||| ||||||||  || ||||||||||
Db      343 tctggagcacagcagaactccaagagtgatcgaggcatggccagtaatgttaaagtagag 402

Qy      181 ACTCAGAGTGATGAAGAGAATGGGCGTGCCTGTGAAAATGAATGGGGAAGAATGTCGGAG 240
            || ||||||  |||||||| |||||| |||| ||||||||||||||||| ||||||||||
Db      403 actcagagtgatgaagagaatgggcgtgcctgtgaaaatgaatgggggaagaatgtcggag 462

Qy      241 GATTTACGAATGCTTGATGCTCCGGGAGAGAAAATGAATGGCTCCACAGGGACCAAGGC 300
            |||||||||| |||||||||||||||||||||||| ||||| ||||||||||||||||||
Db      463 gatttacgaatgcttgatgctccgggagagaaaatgaatggctcccacagggaccaaggc 522

Qy      301 AGCTCCGCTTTGTCGGGAGTTGGAGGCATTCGACTTCCTAACGGAAAACTAAAGTGTGAT 360
            ||||||||| |||||| |||||||||||||||||||||||||||||||||||||||||||
Db      523 agctccgctttgtcaggagttggaggcattcgacttcctaacggaaaactaaagtgtgat 582

Qy      361 ATCTGTGGGATCATTTGCATCGGGCCCAATGTGCTCATGGTTCACAAAAGAAGCCACACT 420
            |||||||| |||||||| || ||||||||||||||||||||| || ||||||||||||||
Db      583 atctgtgggatcgtttgcatcgggcccaatgtgctcatggttcacaaaagaagtcatact 642

Qy      421 GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGGCAACCTG 480
            || ||||||| |||||||||||||||||||||||||||||||||||||||||||||||||
Db      643 ggtgaacggccttтccagtgcaaccagtgcggggcctcattcacccagaaggcaacctc 702

Qy      481 CTCCGGCACCATCAAGCTGCCATTCCGGGAGAAGCCCTTCAAATGCCACCTGCAACTAC 540
            |||||||||||||||||||| | |||||||||||||||||| ||||||||||| |||||
Db      703 ctgcggcacatcaagctgcactcgggtgagaagcccctcaaatgccatctcttgcaactat 762

Qy      541 GCCTGCCGCCGGAGGACGCCCTCACTTGCCACCTGGACGGCCACTCCGTTGGTAAACCT 600
            |||||||||||||||||||||||| |||||||||||||||||||||||||||||||||||
Db      763 gcctgccgccggaggacgccctcaccggccacctgagggacgcactccgttggtaagcct 822

Qy      601 CACAAATGTGGATATTGTGGCCGAAGCTATAAACACGCAAGCGTCTTTAGAGGAACATAAA 660
            || ||||||||||| ||||| |||||||||| ||||||||||||||||||||||||||
Db      823 cacaaatgtggatattggccggagctataaacagcgaagctctttagaggaggagcataaa 882

Qy      661 GAGCGCGTGCCACAACTACTTGGAAAGCATGGCCTTCCGGCACACTGTACCCAGTCATT 720
            |||||||| ||||||||||||||||||| || |||| |||||||||||| |||||||||||
Db      883 gagcgatgccacaactacttggaaagcatgggccttccggc---gtgtccagtcatt 939

Qy      721 AAAGAAGAAAACTAAGCACAGTGAAATGGCAGAAGACCTGTCAAGATAGGATCAGAGAGA 780
            ||||||||| ||| |||  ||||||||||||||||||||||||||||||||||||||||||
Db      940 aaggaagaaactaaccacaacgagatggcagaagacctgtcaagataggagcagagagg 999

Qy      781 TCTTCCTGTGCTGGACAGACTAGCAAGTAATGTCGCCAAACTAAGAGCTCTATGCCTCAG 840
            || || |||||||||||||||||||||||||||||||||| ||||||||| ||||||||||
Db     1000 tcccttgtcctggacaggctggcagcaatgtcgccaaacgtaagagcctatgcctcag 1059

Qy      841 AAATTTCTTGGGACAAGGGACCTGTCCGACACAGACGGCCACGTACGACGAAG 900
            ||||||||| |||||||| |||||||| ||||||||||| ||||||||||||||
Db     1060 aaatttcttggagacaagtgcctgtcagacatgccctatgcagagtgccaactatgagaag 1119

Qy      901 GAGAACGAAATGATGAAGTCCCACGTGATGAGCACCAAGCCATCAACAACGCCATCAACTAC 960
            || |||||||||||||| || ||||||||||| |||||||||||||| ||||| |||||||
Db     1120 gag---gatatgatgacatcccacgtgatggaccaggccatcaacaatgccatcaactac 1176

Qy      961 CTGGGGCCGAGTCCCTGCCGCCCGGCGTTCCGAGGTGGTC 1020
            ||||||| ||||| |||||| || |||||||| || |||||
Db     1177 ctggggctgagtccctgccgccattgtgcagacacccccgtagctccgaggtggtg 1236

Qy     1021 CCGGTCATCAGCCCGATGTACCAGCTGCACAGG---CGCTCGGAGGGCACCCCGGCCTCC 1077
            ||||||||||||||||||| |||| |||||||||   |  |||||||||||||||||||||
Db     1237 ccagtcatcagcctccatgtaccagctgcacaagctgcaccccctcagatggccccacggtcc 1296
```

```
XX
DR   WPI; 1998-582621/49.
DR   P-PSDB; AAW72674.
XX
PT   Ikaros poly:peptide(s) - useful for treating disorders of immune
PT   system or corpus striatum
XX
PS   Disclosure; Column 61-66; 11pp; English.
XX
CC   The present invention describes a purified peptide having at least one
CC   of the following properties: (a) it stimulates transcription of a DNA
CC   sequence under the control of a delta A element, an NFKB element or an
CC   Ikaros binding oligonucleotide consensus sequence; (b) it binds to any of
CC   a delta A element, an NFKB element or an Ikaros binding oligonucleotide
CC   consensus sequence; (c) it competitively inhibits the binding of a
CC   naturally occurring Ikaros isoform to any of a delta A element, an NFKB
CC   element or an Ikaros binding oligonucleotide consensus sequence; (d) it
CC   competitively inhibits Ikaros binding to Ikaros responsive elements; or
CC   (e) it inhibits protein-protein interactions of transcriptional complexes
CC   formed with naturally occurring Ikaros isoforms. The proteins, provided
CC   that they stimulate gene transcription under the control of delta A
CC   elements, NFKB elements and/or Ikaros-binding oligonucleotides, bind to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides to
CC   competitively inhibit binding of naturally occurring Ikaros isoforms to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides and/or
CC   competitively inhibit Ikaros binding to Ikaros-responsive elements and/or
CC   inhibit protein-protein interactions of transcriptional complexes with
CC   naturally occurring Ikaros isoforms, can be used to treat immune system
CC   disorders, e.g. leukaemia or AIDS, or corpus striatum disorders, e.g.
CC   Alzheimer's disease. The present sequence encodes a specifically
CC   claimed mouse Ikaros protein.
XX
SQ   Sequence 2049 BP; 514 A; 531 C; 574 G; 430 T; 0 other;

Query Match             75.7%;  Score 1174.8;  DB 19;  Length 2049;
Best Local Similarity   87.2%;  Pred. No.7.8e-254;
Matches 1365;   Conservative    0;  Mismatches 177;   Indels  24;  Gaps    6;

Qy      1 ATGGATGCTGACGAGGTCAAGACACATGTCTTTTCTCATCAGGGAGGAAGGAAAGCCCCCTGTA 60
          |||||||||||||| |||||||| |||||||||||| ||||| ||||||||| |||||||||| |
Db    223 atggatgtcgatgaggtcaagacatgtccaagttcaggaaaggaggaggagccccccagtc 282

Qy     61 AGCGGATACTCCAGATGAGGGCATGAGCCCATGCCAGTCGCTGCCTGAGGACCTCTCCACCACC 120
          || ||||||| |||||||| || |||||||||||||| |||| |||| |||| ||| |||| |||
Db    283 agtgacactccagatgaaggggatgagccgctgcctgaggacctgtccactacc 342

Qy    121 TCGGGAGGACAGCAAAGCTCCAAGAGTGACAGAGTCGTGGCCAGTAATGTTAAAGTAGAG 180
          || |||| |||||| |||||||||||| |||||| || |||||||||||| |||| |||||
Db    343 tctggagcacagcagaactccagagtgatcgagggcatggccagtaatgttaaagtagag 402

Qy    181 ACTCAGGTGATGAAGAGAATGGCTGCCTGAAATGAATGGGGAAGAATGTCGCGAG 240
          ||||||||||| ||||||| ||||||||||| ||||| ||| ||||||||| ||||
Db    403 actcagtgatgaagagaatgggccgtgcctgtgaaatgaatgggaagaatgtgcagag 462

Qy    241 GATTTACGAAATGCTTGATGCCTCCGGAGAGAAAATGAATGGCTCCCAGGGACCAAGGC 300
          ||||||||||||| ||||||||| |||||||||||||| |||||||||||||||||||||
Db    463 gatttacgaatgcttgatgcctcggggagaaaatgaatgctcccacagggaccaaggc 522

Qy    301 AGCTCGGCTTTGTCGGGAGTTGAGGCATTGACTTCCTAACGGAAAACTAAAGTGTGAT 360
          ||| |||||||||||||||||| ||||||||||||||||||||||| ||||||||||||
Db    523 agtcggcttgtcagggagttgaggcattgacttcctaacgaaaactaaagtgtgat 582

Qy    361 ATCTGTGGGATCATTTGCATCGGGCCCAATGTGCTCATGGTTCACAAAAGAAGCCACACT 420
          |||||||||||||||||||| |||||||||||| || |||||||||||||||||| |||||
Db    583 atctgtgggatcgtttgcatcggccccaatgtgctcatgttcacaaagaagtcatact 642

Qy    421 GGAGAACGGCCCTTCCAGTGCAATCAGTCGCGGGCCTCATTCACCCAGAAGGCAACCTG 480
          |||||||||||||||||||||||||||| |||||||||||| |||||||||| ||||||||
Db    643 ggtgaacggcctttccagtgcaaccagtcgggcctccttaccagaaaggcaacctc 702

Qy    481 CTCCGGACCATCAAGCTGCATTCCGGGAGGAGAGCCCTTCAAATGCCACCTCTGCAACTAC 540
          || |||||||||||||||||| || |||||||||||||||||||| || |||||||||||||
```
```
Qy   1078 AACCACTCGGCCCAGGACAGCGCCGTGAGTACCTGCTGCTCTCCAAGGCCAAGTTG 1137
          |||| || || ||||| ||||                 |||||||||||||||||||
Db   1297 aaccattcagcagcagga--cgccgtggataacttgctgctgctccaaggccaagtct 1353

Qy   1138 GTGCCCTTCGGAGCCGCGAGGCGTCCCCGAGCAACAGCTGCCAAGACTCCACGGACACCGAG 1197
          ||||||||||||| ||||  || ||||||||||||||| ||| |||| || |||| |  |||
Db   1354 gtgtcatcggagcggagcgggagggcctcccccgacaacagctgccaagactcccagatacagag 1413

Qy   1198 AGCAACAACGAGGAGCAGCGCAGCGGTCTTATCTACCTGACCAACCACCACATCGCCCGACGC 1257
          ||||  |||| |||||||||||||||| ||||||||  ||||||||||| |||||||||||||
Db   1414 agcaacgcggaggaaacagcgcagcggcctcaccaacctaactacctacctaacccgcat 1473

Qy   1258 GCGC---AACGGCGTGTCGCTCAAGGAGGAGCACCGACCTACGACCTGCTGCGCGGCCCGCC 1314
          | || |  |||  ||||| |||| || ||||| ||| ||||  || |||||| | |||||||
Db   1474 gcacgcaatgggctggctcctcaaggaggagcgagcgcctacgaggtgcgaggcggcc 1533

Qy   1315 TCCGAGAACTCGCAGACGACGGCGTCCGCGTGGTCAGCACCAGCGGGGAGCAGATGAAGTG 1374
          |  ||||||||||||||||| ||      ||||||| ||| || |||||||||||||||||
Db   1534 tcagagaactcgcaggatgccttccgtggtcagcacgagtggcgagcagtgcagtgaaggtg 1593

Qy   1375 TACAAGTGCGAACACTGCCGGGTGCTCTTCCTGGATCACGTCATGTTACACCATCCACATG 1434
          ||||||||| |||||| ||||| |||||||| |||||||||||| |||| |||||| |||||
Db   1594 tacaagtgcgaacactgccgcgtgctcttcctggatcacgtcatgtataccattcacatg 1653

Qy   1435 -------GGCTGCCACGGCTTCCGTGATCCTTTGAGTGCAACATGTGCGCTACCAC 1485
                 ||||||||| || ||||| |||||||| | ||| ||| ||||| ||| |||
Db   1654 ggctgccatggcttcggtgatccctttgagtgtaacatgtgttggtatcac 1713

Qy   1486 AGCCAGGACCGGTACGAGTTCTCGTCGCACATAAACGGGAGGGAGCACCGCTTCCACATG 1545
          |||||||| ||||| ||||||| |||||| |||||| || |||||||||||||||||||||
Db   1714 agccaggacggtacgagttctcatcacgcggggggagcatcgttccacacctg 1773
```
```
Qy   1546 AGCTAA 1551
          ||||||
Db   1774 agctaa 1779
```
```
RESULT    8
AAV66971
ID   AAV66971 standard; cDNA; 2049 BP.
XX
AC   AAV66971;
XX
DT   14-JAN-1999 (first entry)
XX
DE   Mouse Ikaros encoding cDNA mIk-1.
XX
KW   CD3-delta gene; Ikaros gene; T cell; progenitor stem cell; leukaemia;
KW   differentiation marker; immune system; corpus striatum; AIDS;
KW   Alzheimer's disease; ss.
XX
OS   Mus sp.
XX
FH   Key            Location/Qualifiers
FT   CDS            223..1779
FT                  /tag= a
FT                  /product= "mIk-1"
XX
PN   US5824770-A.
XX
PD   20-OCT-1998.
XX
PF   05-JUN-1995;  95US-0465590.
XX
PR   02-MAY-1994;  94US-0238212.
PR   14-SEP-1992;  92US-0946233.
PR   14-SEP-1993;  93US-0121438.
PR   05-JUN-1995;  95US-0465590.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
```

```
RESULT    9
AAV42808
ID   AAV42808 standard; cDNA; 2049 BP.
XX
AC   AAV42808;
XX
DT   11-JAN-1999 (first entry)
XX
DE   Mouse Ikaros isoform mIk-1 cDNA.
XX
KW   Ikaros; mIK-1; transcription factor; mouse; lymphocyte;
KW   cell differentiation; T cell; cancer; immunodeficiency;
KW   Alzheimer's disease; therapy; diagnosis; ss.
XX
OS   Mus sp.
XX
FH   Key             Location/Qualifiers
FT   CDS             223..1779
FT                   /*tag= a
FT   exon            223..384
FT                   /*tag= b
FT                   /number= Ex1/2
FT   exon            385..643
FT                   /*tag= c
FT                   /number= Ex3
FT   exon            644..810
FT                   /*tag= d
FT                   /number= Ex4
FT   exon            811..933
FT                   /*tag= e
FT                   /number= Ex5
FT   exon            934..1076
FT                   /*tag= f
FT                   /number= Ex6
FT   exon            1077..1779
FT                   /*tag= g
FT                   /number= Ex7
XX
PN   CA2194256-A.
XX
PD   05-MAR-1998.
XX
PF   02-JAN-1997;    97CA-2194256.
XX
PR   05-SEP-1996;    96US-0711417.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1998-378292/33.
DR   P-PSDB; AAW70966.
XX
PT   New nucleic acid encoding Ikaros protein involved in early
PT   differentiation of lymphocytes - existing in several isoforms, and
PT   related products, used to treat e.g. immune diseases or cancer and
PT   to control cell differentiation
XX
PS   Claim 7; Page 75-77; 158pp; English.
XX
CC   This is the nucleotide of mouse Ikaros cDNA (isoform mIk-1) that
CC   codes for a 518-amino acid zinc finger protein (see AAW70966) that is
CC   involved in the early differentiation of lymphocytes.  mIk-1 cDNA
CC   was isolated from a mature murine T cell line E14 library using a
CC   300 bp fragment from the 3' end of mIk-2 cDNA (see AAV42805) as
CC   probe.  5 Different isoforms of mouse Ikaros (see AAV42805 and
CC   AAV42807-10) have been identified.  These arise by differential
CC   splicing of Ikaros gene transcripts.  Isoform mIk-1 contains all 7
CC   exons. It is abundantly expressed in the early foetal liver, the
CC   maturing thymus and the postnatal spleen.  The Ikaros gene is
CC   located at the proximal arm of murine chromosome 11.  Ikaros
```

```
Db    703 ctgcggcacatcaagctgcactcgggtgagaagccctcaaatgccatctttgcaactat 762
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Qy    541 GCCTGCCGCCGGAGGGACGCCCTCACTGGCCACCTGAGGACGCACTCCGTTGGTAAACCT 600
Db    763 gcctgccgccggaggggacgccctcaccggcacctcgagggacgcactccgttggtaagcct 822
              ||||||||||||| ||||||||||| ||||||||||||||||||||||||| |||||
Qy    601 CACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAACGTCTTTAGGAGAACATAAA 660
Db    823 cacaaatgtggatattgtggccggagctataaacagcgaagctctttaggaggagcataaa 882
              ||||| |||||||||||||||||||||| |||||| ||||||||||||||||||||||
Qy    661 GAGCGCTGCCCACAACTACTTGGAAAGCATGGGCCTTCCGGCCACACTGTACCCAGTCATT 720
Db    883 gagcgcatgccacaactacttggaaagcatgggccttccgggc---gtgtgccagtcatt 939
                 ||||| |||||||||||||||||||||||||  || ||||||||||||||||||
Qy    721 AAAGAACGAAAACTAAGCACAGTGAAATGGCAAGAGACCTGTCAAGATAGGATCAGAGAGA 780
Db    940 aaggaagaaactaaccacacagagatggcagaagacctgtcaagataggagcagagagg 999
              || |||| |||| ||||| ||||||||||||||| |||||||||||||| ||||||||
Qy    781 TCTCTCGTCGTGGACAGACATAGCAAGTAATGTCGCCAAACGTAAGAGCTTCTATGCCTCAG 840
Db   1000 tccctgtctggacaggctggcaagcaatgtcgccaaacgtaagagctctatgcctcag 1059
              || || |||||||| || |||| ||||||||||||||||||||||||||||||||||
Qy    841 AAATTTTCTTGGGGACAAGGGCCTGTCCGACACGCCCTACGACAGTGCCACGTACGAGAAG 900
Db   1060 aaatttcttggagacaagtgcctgtcagacatgccctatgacagtgccaactatgagaag 1119
              ||||| |||||| || ||| |||||| |||| |||||| |||||||| |||||||||||
Qy    901 GAGAACGAAATGATGAAGTCCCACGTGATGACCAAGCCCATCAACAACACGCCATCAACTAC 960
Db   1120 gag---gatatgatgacatcccacgtgatggaccaggccatcaacaatgccatcaactac 1176
                    ||| |||| |||||||||||||||| |||| |||||||||||| ||||||||||
Qy    961 CTGGGGCCCAGTCCCTGCCGCCGTGGTGCAGACGCCCCCGGGCGGTTCCGAGGTGGTC 1020
Db   1177 ctggggggctgagtccctgcgcccaattggtgcagacaccccccgtagctcgaggtggtg 1236
              || |||||| ||||| |||| |||||||||||||| |||| || | ||||||||||||
Qy   1021 CCGGTTCATCAGCCCGATGTACCAGCTGCACAGG---CGCTCGGAGGGCACCCCGCGCTCC 1077
Db   1237 ccagtcatcagccccatgtaccagctgcacaagtgcacaagcccccccacggtcc 1296
              || |||||||||||  |||||||||||||| ||  | ||| |||| ||||| || ||
Qy   1078 AACCACTCGGCCCCAGGACCAGCAGCGCCGTGAGTACCTGCTGCTCTCCAAGGCCAAGTTG 1137
Db   1297 aaccattcagcacgga---cgccgtggataacttgctgctcgtgtccaaggccaagtct 1353
              ||||| | ||| ||  | | ||||| |||||||||||||||| |||||||||||||| ||
Qy   1138 GTGCCCCTCCGAGCCGCGAGGCGTCCCCGAGCAACAGCTGCCAAGACTCCACGGACACCGAG 1197
Db   1354 gtgtcatcggagcgagaggcctccccggaccaacagctgccaagactcccacgatacagag 1413
              ||| ||| || || || ||||||||| | ||||||||||||||||||||| ||| ||||||
Qy   1198 AGCAACAACGAGAGAGCAGCGCAGCGGTTCTTATCTACCTGACCAACCACATCGCCCGACGC 1257
Db   1414 agcaacgcgaggaacagcgcagcgggccttatctacctaactaaccacacatcaacccgcat 1473
              ||||| |||||||| |||| ||| || |||||||||||| ||||||| ||||||||| |
Qy   1258 GCGC---AACGCCTGTCGCTCAAGGAGGACCACCGCCCTACGACCTGCTGCGCGCCGCC 1314
Db   1474 gcacgcaatgggctggctcctcaaggaggagcgagcagcgcgctacgaggtgctgaggcggc 1533
              || |  |- || | |||||||||||||||||||| |||| || || |||| |||| || |
Qy   1315 TCCGAGAACTGCAGACCGCCAGGACGCGCTCCGCGTGGTCAGCACGCGGGGAGCCAGATGAAGGTG 1374
Db   1534 tcagagaactcgcaggatgcctccgtggtcgtggtcagcacgacgagtggcgagcagctgaaggtg 1593
              ||| ||||||| ||| ||||| ||| | ||||||||||||| ||||||||| || || |||||
Qy   1375 TACAAGTGCGAACACTGCCCGGGTGCTTCCTGGATCACGTCATGTACACCATCACCACCATG 1434
Db   1594 tacaagtgcgaacactgcogcggtgctcttctctggatcacgtcatgtataccattcacatg 1653
              |||||||||||||||||| || |||| | |||||||||||||| ||||| |||| ||| ||
Qy   1435 --------GGCTGCCACGGCTTCCGTGATCCTTTTGACTGCAACATGTGCGGCTACCAC 1485
              ||||||||| |||| ||||||||||||||||| |||||||| |||||||||||||||||
Db   1654 ggctgccatggctgccatggcttcggtgatgtaacatgtggttatcac 1713
Qy   1486 AGCCAGGACCCGTACCGAGTTCTCGTGCCACATAACGCGAGGGAGCACCGCTTCCACATG 1545
              ||||| |||| ||| |||||| || |||| |||| ||||| ||||| |||| |||||||
Db   1714 agccaggacaggtacgagttctcatccacgcggggggagcatcgcgtcacacctg 1773
Qy   1546 AGCTAA 1551
              ||||||
Db   1774 agctaa 1779
```

```
CC    proteins are suggested to play a role as a genetic switch
CC    regulating entry into the T cell lineage.  The murine and human
CC    (see AAV42806, AAV42811 and AAV42840) Ikaros sequences are very similar.
CC    The invention provides Ikaros nucleic acids, vectors and host cells
CC    expressing Ikaros proteins.  These are used to treat T and B cell
CC    diseases (e.g. immune deficiencies caused by drugs, radiation or
CC    cancers), to control expression of heterologous genes placed under
CC    control of an Ikaros-responsive element, to treat nervous system
CC    diseases (e.g. Alzheimer's disease) and to modulate cell division,
CC    amplification or differentiation, especially in haematopoietic
CC    cells.  Some Ikaros isoforms are antagonistic of others and may be
CC    used to inhibit interaction with DNA sequences.  The same effect
CC    can be achieved with Ikaros-binding oligonucleotides.  Examining
CC    the expression of the Ikaros gene, or its allelic structure, can be
CC    used to assess risk of acquiring the above diseases.
XX
SQ    Sequence 2049 BP; 514 A; 531 C; 574 G; 430 T; 0 other;

Query Match         75.7%;    Score 1174.8;   DB 19;   Length 2049;
Best Local Similarity   87.2%;    Pred. No. 7.8e-254;
Matches 1365;  Conservative     0;  Mismatches   177;    Indels    24;   Gaps    6;

Qy       1 ATGGATGCTGACGAGGTCAAGACACATGTCTTTCTCATCAGGGAACGAAAGCCCCCCTGTA    60
           ||||||||  ||  |||||||||||||||||||||||
Db     223 atggatgtcgataggggcaggacatgtcccagttcaggaaaggagagccccccagtc   282

Qy      61 AGGGATACTCCAGATGAGGGCGATGAGCCCATGAGCCGATCCCGGAGGACCTCTCCACCACC   120
           || ||||||||||||  |||||||||||||||||||||| |||||| ||||| ||
Db     283 agtgacactccagatgaaggggtgagcccatgcctgccctgccctgaggacctgtccactacc   342

Qy     121 TCGGGAGGACCAGCAAAGCTCCAAGAGTCACAGAGTCGTGGCCAGTAATGTTAAAGTAGAG   180
           || |||||||||||||||| | ||||||||||   ||| ||||||||||||||||||||
Db     343 tctggagcacagcagaactccaagagtgatcgaggcatggccagtaatgttaaagtagag   402

Qy     181 ACTCAGAGTGATGAAGAGAATGGGGTCCGTGTGAAATGAATGGGGAAGAATGTGCGGAG   240
           |||||||||||||||||||||| ||||||||||||||||||||||||
Db     403 actcagagtgatgaagagaatggggcgtgcctgtgaaatgaatgaatgtgcagag   462

Qy     241 GATTTACGAATGCTTGATGCCTCGGGAGAGAAAATGAATGCCTCCCACAGGGACCAAGGC   300
           || ||| |||||||||||||||||||| |||||||||||||||||||||||||||||
Db     463 gatttacgaatgcttgatgcctcgggagagaaaatgaatggctcccacagggaccaaggc   522

Qy     301 AGCTCGGCTTTGTCGGAGTTGGAGGCATTCGACTTCCTAACGGAAAACTAAAGTGTGAT   360
           |||||||||||||||||||| ||||||||||||| |||||||||||||||||||
Db     523 agctcggctttgtcaggagttggagtcattcgacttcctaacggaaaactaaagtgtgat   582

Qy     361 ATCTGTGGGATCATTCGGGCCCCAATGTCTTCACATGGTTCCTCATGGTTCACACACT   420
           ||||||||| ||||||||||||||||||| || ||||||
Db     583 atctgggatcgtttgcatcgggcccaatgtgctcatcatggttcacaaagaagtcatact   642

Qy     421 GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGACCCTCATTCACCCAGAAGGGCAACCTG   480
           || ||||||| || |||||| ||||||||||||||||||||||||||||||||||||
Db     643 ggtgaacggccttccagtgcaaccagtcgggggcctccttcaccagaaagcaacctc   702

Qy     481 CTCCGGCCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTGCAACTAC   540
           |||||||||||||||||||||||||||||||| |||||||||||||||||||||||
Db     703 ctcgcggcacatcaagctgcactcggtgagaacgccactccgttgcaactat   762

Qy     541 GCCTCGCCGCCGAGGGAGACGCCCTCACTGGCCACCTGAGGACGCCACTCCGTTGGTAAACCT   600
           |||||||||||||||||||||||||||||||||||| |||| || || |||||||||||
Db     763 gccctgccgccgaggggacgccctcaccggacgcactccgttggtaagcct   822

Qy     601 CACAAATGTGGATATTGTGGCCGAGACTATAAACAGCGAACGTCTTTAGAGGAACATAAA   660
           ||||||| ||||||||||||||||| | | ||||||||||||||||||||||||||||
Db     823 cacaaatggatattggggccggagctataaacagcgaagctctttagaggagcataaa   882

Qy     661 GAGCGGCTGCCACAACTACTTGGAAAAGCCATGGGCCTTTCCGGGCCACACTGTACCCAGTCATT   720
           |||| ||||||||||||||||||||||| | ||||||||| |||||||||||
Db     883 gagcgtgccaactacttggaaagcatgggccctccgggc---gtgtgccgtcatt   939

Qy     721 AAGAAGAAACTAAGCACACAGTGAAATGGCAAGAGACCTGTGCAAGATAGGATCAGAGAGA   780
           || |||||||||| ||          ||||||||||||||||||||||   ||||||||
```

```
Db     940 aaggaagaaactaaccacaacgagatgcgcagaagaccgatgtgtgcaagataggagcagagagg    999
                ||||||||||||||||||||||||||||||  ||||||||||||||||||||||||||||||
Qy     781 TCTCTCGTGCTGGCAGACTTAGCACAAGTAATGTCCCAAACGTAAGAGCTCTATGCCTCAG    840
                ||||  ||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    1000 tcccttgtcctggacaggctggcaagcaatgtcgccaaacgtaagagcctaagcctagcgcctcag   1059
                ||  | | ||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Qy     841 AAATTTCTTGGGACAAGGGCCTGTCCGACACGGCCCTAGACAGTGCCACGTACGAGAAG    900
                ||||||||||||||||||||  |||||| || |||||||||||||||||||||| || |||||
Db    1060 aaatttcttggacaagtgcctgtcagacatgcctatgacagtgccaactatgagaag   1119
                ||||  | |||||||||||||| ||||||||||| ||||||||||||||||||||||||||
Qy     901 GAGAACGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAACAACGCCATCAACTAC    960
                |||  | ||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db    1120 gag---gatatgatcaacgatggaccagccatcaacaatgccatcaactac   1176
                ||||||| || ||||||||||||||||||||||||||||||||||||||||||||||||||||
Qy     961 CTGGGGGCCGAGTCCTGCGCCGCGTGGTGCGACAGCGCCCCGGCGGGTTCCGAGTGGTC   1020
                |||||||||||||||||||||||||||||||||| | | |||||||||||||||||||
Db    1177 ctggggcctgagtccctgccgccggcccattggtcagacacccccgttgagctccgaggtggtg   1236
                ||||  |||||||||||||||||||||||||||  | ||||||||||||||||||||||||||
Qy    1021 CCGGTCATCAGCCCGATGTACCAGCTGCACAGG---CGCTCGGAGGGCACCCCGCGCTCC   1077
                | |||||||||||||||||||| ||||||||||| |     |||||||||||||||||||
Db    1237 ccagtcatcagctccatgtaccagctgcacaagccccctcagatggccccacggtcc   1296
                ||||||||||||||||||||||||||||||||||  |||||||||||||||||||||||||||
Qy    1078 AACCACTCGGCCCAGGACAGCAGCCGCGTTGSAGTTACCTGCTGCTCCAAGGCCAAGTTG   1353
                || |||||||||||| |    ||| |||||||| |||||||||||||||||||||||| |||
Db    1297 aaccattcagcacagga---cgccggtggataacttgctgctgctgtccaaggccaagtct   1353
                ||  |||||||||||||||||||||||||||| ||||||||||||||||||||||||| ||
Qy    1138 GTGCCCTCGGAGCGCGAGCGCGTCCCCGAGACTTCCTCACCACC   1197
                ||| | |||||||||||||||||||||| |||||||||||||||||||||||||||||
Db    1354 gtgtcatcggagcgagaggcctcccggcgcaacagcagtgccacagatacagag   1413
                ||||||||||||||||||||||||||||||||||||||||  | |||||||||||||
Qy    1198 AGCAACAACGAGAGCAGCCGAGCCGGTCTTATCTAACCTACCACAATCCCCGAGCGC   1257
                ||||||||||||||||||||||||  ||||||||||||||||||||||||||||||||
Db    1414 agcaacgcggaggacagcgcgcagcgcgcccttatctacctacccaaccacatcaacccgcat   1473
                ||||| |  |||||||||||||||||||||||| | |||||||||||||||||||||||
Qy    1258 GGCGC---AACGCGTGTCGGCTCAAGGAGGAGCACCGGCCGCGGCCACCTGCTCGCGCGCCGCCC   1314
                ||||    ||||||||||||| ||||| | |||||||||||||||||||||||||||||||
Db    1474 gcacgcaatgggctggctcctcaagaggaggagcagcgccgcctacgagagtgcagatgaaggtg   1533
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||  | |
Qy    1315 TCCGAACTCGCAGGAGCGCGTCCGCGTGGTCAGCACCAGCGGGAGCAGATGAAGGTG   1593
                || |||||||||||||||||||||||||| || ||||||||||||||||||||||| ||
Db    1534 tcagagaactcgcaggatgcctccggtgctcttcctggtcagcacgagctgggagtg   1593
                ||||||||||||||||||||||||||||||||  |||||||||||||||||||||||||| |
Qy    1375 TACAAGTGCGAACACTGCCGGTGTCGTCTTCCTGGTCTCATGTACACCATCCACATG   1434
                |||| |||||||||||||||||||||||||||||||||||||| |||||||||||||||||||
Db    1594 tacaagtgcgaacactgccgcgtgctcttcctggtctcctgatcacgtcatgtataccaccacatg   1653
                |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| ||
Qy    1435 --------GGCTGCCACGGCTTCCGTGATCCTTTGAGTGCAACATGTGCCGCTACCAC   1485
                        |||||||||||||||||||||||||||||||||||||||||||||||||||| ||
Db    1654 ggctgccatggctgccatggcttcggggatccctgagtttgatccatgtgttatcac   1713
                ||||||||||||||||||||||||||||||||||||||||||||||||| | ||
Qy    1486 AGCCAGGACCGGTACGAGTTCTCGTCGCACATAACGGCACCGCCTTCCACATG   1545
                |||||||||||||||||||||||||||||||||||||| | |||||||||||| ||
Db    1714 agccagacaggtacgagttctcatcccatcacgcgggggggggcatcgttaccacctg   1773
                |||||||||||||||||||||||||||| |  ||||||||||||
Qy    1546 AGCTAA   1551
                |||||
Db    1774 agctaa   1779
```

```
RESULT 10
AAT16065
ID   AAT16065  standard;  cDNA;  1004 BP.
XX
AC   AAT16065;
XX
DT   09-MAY-1996  (first entry)
XX
DE   Ikaros cDNA.
XX
KW   Ikaros; transgene; transgenic animal; transgenic mouse;
KW   immunocomprised; immune system disorder; nervous system disorder;
KW   animal model; ss.
XX
```

```
OS   Not specified.
XX
PN   WO9604372-A1.
PD   15-FEB-1996.
XX
PF   28-JUL-1995;  95WO-US09345.
XX
PR   29-JUL-1994;  94US-0283300.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI: 1996-129389/13.
DR   P-PSDB; AAR92020.
XX
PT   Transgenic rodent having Ikaros trans-gene (pref. mutated) - is
PT   severely immuno-compromised and can be used as model to determine
PT   effects of treatment for immune and nervous system disorders
XX
PS   Disclosure: Page 71-73; 102pp; English.
XX
CC   A cDNA clone (AAT16065) coding for an Ikaros protein (AAR92020) has
CC   been identified.  Transgenic animals, pref. mice, having a
CC   mutated Ikaros transgene, esp. a mutation that alters the DNA
CC   binding domain of the Ikaros protein, are used as models to
CC   determine the effects of treatments for immune or nervous system
CC   disorders.
XX
SQ   Sequence 1004 BP; 235 A; 328 C; 286 G; 155 T; 0 other;

Query Match             56.0%;  Score 868;  DB 17;  Length 1004;
Best Local Similarity   88.8%;  Pred. No. 3.8e-185;
Matches  1004;  Conservative    0;  Mismatches    0;  Indels  126;  Gaps    1;

Qy    421 GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGGCAACCTG 480
          |||||||||||| |||||||||||||||||||||||||||||||||||||| |||||||||
Db      1 ggagaacggcccttccagtgcaatcagtgcggggcctcattcacccagaagggcaacctg 60

Qy    481 CTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTCTGCAACTAC 540
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     61 ctccggcacatcaagctgcattccggggagaagcccttcaaatgccacctctgcaactac 120

Qy    541 GCCTGCCGCGGAGGGACCGCCCTCACTGCCTCCTGAGGACGCCACTCCGTTGGTAAACCT 600
          |||||||||||||||||||||||||||||| |||||||||| ||||
Db    121 gcctgccgcggagggaccgcccctcactgcctcactggcgcactgc------------- 168

Qy    601 CACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAAGCGTCTTTAGAGGAACATAAA 660
Db    169 ------------------------------------------------------------ 168

Qy    661 GAGCGCTGCCACAACTACTTGGAAAGCATGGGCCTTCCGGGCCACACTGTACCCAGTCATT 720
                                                                   ||||||
Db    169 ------------------------------------------------------gtcatt 174

Qy    721 AAGAAGAAGAAACTAAGCACAGTGAAATGGCAGAAGACCTGTGCAAGAAGGATCAGAGAGA 780
          || |||||| ||||||||||||||||||||||||||||||||||||||||| |||||||||
Db    175 aaagaagaaactaagcacagtgaaatggcagaagacctgtgcaagaaggatcagagaga 234

Qy    781 TCTCTCGTGCTGACAGACTAGCAAGTAATGTCGCCAAACGTAAGAGCTTCTATGCCTCAG 840
          ||||||||||||||||||||||||||||||||||||||||||||||| |||||||||||
Db    235 tctctcgtgctgacagactagcaagtaatgtcgccaaacgtaagagctctatgcctcag 294

Qy    841 AAATTTCTTGGGACAAGGGCCTGTCCGACACGCCTACGACAGTGCCACGTACGAGAAG 900
          |||||||||||||||||| |||||||||||||||||||||||||||||||||||||||
Db    295 aaatttcttgggacaaggcctgtccgacacgcctacgacagtgccacgtacgagaag 354

Qy    901 GAGAACGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAACAACGCCATCAACTAC 960
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    355 gagaacgaaatgatgaagtcccacgtgatggaccaagccatcaacaacgccatcaactac 414
```

```
Qy    961 CTGGGGGCCGAGTCCTCGCCCCGTGGTCGCAACGCGCCCCGGGCGGCGGTTCCGAGGTGGTC 1020
          ||||||| |||||||| |||||| |||||||| ||||||| ||| || ||||||||||||| 
Db    415 ctggggggccgagtccctgcgccccgctggtgcagacgcgcccccggcgggttccgaggtggtc 474

Qy   1021 CCGGTCATCAGCCCGATGTACCAGCTGCACAGGCGCTCGAGGGCACCCCGCGGCTCCAAC 1080
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    475 ccggtcatcagcccgatgtaccagctgcacaggcgctcgagggcaccccgcggctccaac 534

Qy   1081 CACTCGGCCCAGGACAGCGCCGTGGAGTACCTGCTGCTGCTCCAAGGCCAAGTTGGTG 1140
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    535 cactcggcccaggacagcgccgtggagtacctgctgctgctccaaggccaagttggtg 594

Qy   1141 CCCTCGGAGCGCGGAGGCGTCCCCGAGCAACAGCTGCCAAGACTCCACGGACACCGAGAGC 1200
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    595 ccctcggagcgcggaggcgtccccgagcaacagctgccaagactccacggacaccgagagc 654

Qy   1201 AACAACGAGGAGCAGCAGCCAGCGGTCTTATCTACCTGACCAACCACCATCGCCCGACGCCG 1260
          ||||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||
Db    655 aacaacgaggagcagcagccagcggtcttatctacctgaccaaccacatcgcccgacgccg 714

Qy   1261 CAACGCGTGCTGCTCAAGGAGGAGCACCGCCCTACGACCTGCTGCGGCGCCGCCTCCGAG 1320
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    715 caacgcgtgctgctcaaggaggagcaccgccctacgacctgctgcggcgccgccctccgag 774

Qy   1321 AACTCCAGGACGCGCTTCCGCGTGGTCAGCACCAGCGGGGAGCAGATGAAGGTGTACAAG 1380
          |||||||||||||||||||||||||||||||||||| ||||||||||||||||||||||
Db    775 aactccaggacgcgcttccgcgtggtcagcaccagcgggagcagatgaaggtgtacaag 834

Qy   1381 TGGCAACACTGCCGGGTGCTCTTCCTGGATCACGTCATGTACACCATCCACATGGGCTGC 1440
          || ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    835 tgcgaacactgccgggtgctcttcctggatcacgtcatgtacaccatccacatgggctgc 894

Qy   1441 CACGGCTTCCGTGCCGATCCTTTTGAGTGCAACATGTCGCGTACCACAGCCAGGACCGGTAC 1500
          |||||||||||| ||||||||||||||||||||||||||| ||||||||||||||||||||
Db    895 cacggcttccgtgatcctttttgagtgcaacatgtcggctaccacagccaggaccggtac 954

Qy   1501 GAGTTCTCGTCGCACATAACGCGAGGGGAGCACCCGCTTCCACATGAGCTA 1550
          ||||||||||||||||||||||||||||||||||||| |||||||||||||
Db    955 gagttctcgtcgcacataacgcgaggggagcaccgcttccacatgagcta 1004
```

```
RESULT 11
AAV66974
ID   AAV66974 standard; cDNA; 1004 BP.
XX
AC   AAV66974;
XX
DT   14-JAN-1999  (first entry)
XX
DE   Ikaros isoform encoding cDNA.
XX
KW   CD3-delta gene; Ikaros gene; T cell; progenitor stem cell; leukaemia;
KW   differentiation marker; immune system; corpus striatum; AIDS;
KW   Alzheimer's disease; ss.
XX
OS   Unidentified.
XX
FH   Key             Location/Qualifiers
FT   CDS             1..1004
FT                   /tag= a
FT                   /product= "Ikaros isoform"
FT                   /note= "no stop codon given"
XX
PN   US5824770-A.
XX
PD   20-OCT-1998.
XX
PF   05-JUN-1995;  95US-0465590.
XX
PR   02-MAY-1994;  94US-0238212.
PR   14-SEP-1992;  92US-0946233.
PR   14-SEP-1993;  93US-0121438.
PR   05-JUN-1995;  95US-0465590.
```

```
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI: 1998-582621/49.
DR   P-PSDB; AAW72677.
XX
PT   Ikaros poly:peptide(s) - useful for treating disorders of immune
PT   system or corpus striatum
XX
PS   Disclosure; Column 71-74; 111pp; English.
XX
CC   The present invention describes a purified peptide having at least one
CC   of the following properties: (a) it stimulates transcription of a DNA
CC   sequence under the control of a delta A element, an NFKB element or an
CC   Ikaros binding oligonucleotide consensus sequence; (b) it binds to any of
CC   a delta A element, an NFKB element or an Ikaros binding oligonucleotide
CC   consensus sequence; (c) it competitively inhibits the binding of a
CC   naturally occurring Ikaros isoform to any of a delta A element, an NFKB
CC   element or an Ikaros binding oligonucleotide consensus sequence; (d) it
CC   competitively inhibits Ikaros binding to Ikaros responsive elements; or
CC   (e) it inhibits protein-protein interactions of transcriptional complexes
CC   formed with naturally occurring Ikaros isoforms. The proteins, provided
CC   that they stimulate gene transcription under the control of delta A
CC   elements, NFKB elements and/or Ikaros-binding oligonucleotides, bind to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides,
CC   competitively inhibit binding of naturally occurring Ikaros isoforms to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides,
CC   competitively inhibit Ikaros binding to Ikaros-responsive elements and/or
CC   inhibit protein-protein interactions of transcriptional complexes with
CC   naturally occurring Ikaros isoforms, can be used to treat immune system
CC   disorders, e.g. leukaemia or AIDS, or corpus striatum disorders, e.g.
CC   Alzheimer's disease. The present sequence encodes an Ikaros isoform from
CC   the present invention.
XX
SQ   Sequence 1004 BP; 235 A; 328 C; 286 G; 155 T; 0 other;

Query Match       56.0%;   Score 868;  DB 19;  Length 1004;
Best Local Similarity  88.8%;   Pred. No. 3.8e-185;
Matches 1004;  Conservative   0;   Mismatches   0;   Indels 126;   Gaps    1;
```

```
Qy  421 GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGCAACCTG 480
          |||||||||||||||||||| ||||||||||||||||||||||||||||||||| |||||
Db    1 ggagaacggcccttccagtgcaatcagtgcggggcctcattcacccagaagggcaacctg 60

Qy  481 CTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCTTCAACCTCTGCAACTAC 540
          ||||||||||||||||||||||||||||||||| ||||| |||||||||||||
Db   61 ctccggcacatcaagctgcattccggggagaagccctcaaatgccacctctgcaactac 120

Qy  541 GCCTGCGCCGGAGGACGCCCTCACTGCCACCTGCCCACCCACTGAGGGACGACGACTCC 600
          ||||||||||||||||||||||||||||||||||||
Db  121 gcctgcgccggaggacgccctcactgccacctgacgacgaccgcactcc--------- 168

Qy  601 CACAAATGTGGATATTGTGGCCGAGCTATAAACAGGCTATAAACAGGAACATAAA 660
Db  169 ------------------------------------------------------ 168

Qy  661 GAGCGCTGCCAACTACTTGGAAAGCATGGGCCTTCCGGGCACACTGTACCCAGTCATT 720
          ||||||
Db  169 ---------------------------------------------gtcatt 174

Qy  721 AAAGAAGAAACTAAGCACAGTGAAATGGCAGAAGACCTGTGCAAGATAGGATCAGAGAGA 780
          ||||||||||||||||||||||||||||     |||||||||||||||||||||||||||
Db  175 aagagaaaactaagcacagtggcaagtggcaagtaggatcagagatcagagaga 234

Qy  781 TCTCTCGTGCTGGACAGACTGGACAAGCTAGCTAGCAAGCTATCACGCCAAACGTAAGAGCTCTATGCCTCAG 840
          |||||||||||||||||||||| ||||||||||||||||||||||||||||||||
Db  235 tctctcgtgctggacagactagcaagtaatgtcgccaaacgtaagagctctatgcctcag 294

Qy  841 AAATTTCTTGGGGACAAGGGCCTGTCCGACACGCCCTACGACAGTGCCCACTACGAGAAG 900
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  295 aaatttcttggggacaagggcctgtccgacacgccctacgacagtgcccactacgagaag 354

Qy  901 GAGAACGAAATGATGAAGTCCACGTGATGGACCAAGCCATCAACGCCATCAACTAC 960
          |||||||||||||||||||||||||| ||||||||||||||||||||||||||||
Db  355 gagaacgaaatgatgaagtccacgtgatggaccaagccatcaacgccatcaactac 414

Qy  961 CTGGGGCCGAGTCCCTGCGCCGCCGGTGCGTGCAGACGCCGGTTCCGAGGTGGTC 1020
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  415 ctggggccgagtccctgcgccgccggtgcgtgcagacgccggttccgaggtggtc 474

Qy 1021 CCGGTCATCAGCCCGATGTACCAGCTGCACAGGCCGGCTCGGAGGCACCCCGGCTCCAAC 1080
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db  475 ccggtcatcagcccgatgtaccagctgcacaggccggctcggaggcaccccggctccaac 534

Qy 1081 CACTCGGCCCAGGACACGCAGGCCGCGGAGTAACCTGCTGCTGTCTCCAAGGCAAGTTGGTG 1140
          |||||||||||||||||||| |||||||||||||||||||||||||||||| |||||||
Db  535 cactcggcccaggacagcgccgtggagtacctgctgctgtctccaaggccaagttggtg 594

Qy 1141 CCCTCGGAGGCGGCGGAGGCGTCCCGAGCAAGACTGCAGCAACGCTGCAAGACTCCACGGACACCGAGAGC 1200
          ||||||||||||||||||||||||| |||||||||||||||||||||||||||||||||
Db  595 ccctcggaggcggcggaggcgtccccgagcaagactgcaagactccacggacaccgagagc 654

Qy 1201 AACAACGAGGAGCAGCCGCAGCGGTCTTATCTTACCTGACCAACCACATCGCCCGACGGCCG 1260
          |||||||||||||||||||||||||| ||||| ||||||||||||||||||||||||||| ||
Db  655 aacaacgaggagcagccgcagcggtctcatctcatcctgaccaaccacatcgcccgacgcg 714

Qy 1261 CAACGCGTCTGCGCTCAAGGAGGAGCACCGGCCTACGACTTGCTGCGCGGCCGCCTCCGAG 1320
          |||||||||| ||||||||||||||||||||||||||||||||||||||| ||||||||||
Db  715 caacgcgtcgctcaaggaggagcaccggcctacgacttgctgcgcgcgccctccgag 774

Qy 1321 AACTCGCAGGACGGCGCTCCGCGTGGTCAGCACCAGCGGGGAGCAGATGAAGGTGTACAAG 1380
          |||||||||||||||||||||||||||||||||||||| |||||||||||||||||||||||
Db  775 aactcgcaggacggcgctccgcgtggtcagcaccagcgggagcagatgaaggtgtacaag 834

Qy 1381 TGCCAACACTGCCGGGTGCTGCTCTTCCTGGCTCATGTACGCCATCATGTACACCATCCACATGGGCTGC 1440
          ||| ||||||||||||||||| ||||||||| |||| ||| ||||| |||||||||||||||||||||||
Db  835 tgcgaacactgccggtgctctcctggtcacgtcatcatgtacaccatccacatgggctgc 894

Qy 1441 CACGGCTTCCGTGATCCTTTTGAGTGCAACATGTGCGGCTCAACATGGCGGCTACCACGGTAC 1500
          |||||||||||||||||||||||||||||||||||||||||||||||| ||| |||||||||
Db  895 cacggcttccgtgatcctttttgagtgcaacatgtgcggctaccacagccaggacggtac 954

Qy 1501 GAGTTCTCGTCGCCACATAACCGAGGGGAGCACCGGCTTCCACATGAGCTA 1550
          ||||||||||||| |||||||| |||||||||||||||||||||||||||||
Db  955 gagttctcgtcgcacataacgcgaggggagcaccggcttccacatgagcta 1004
```

```
PI   Georgopoulos K;
XX
DR   WPI; 1998-378292/33.
DR   P-PSDB; AAW70969.
XX
PT   New nucleic acid encoding Ikaros protein involved in early
PT   differentiation of lymphocytes - existing in several isoforms, and
PT   related products, used to treat e.g. immune diseases or cancer and
PT   to control cell differentiation
XX
PS   Claim 7; Page 82-83; 158pp; English.
XX
CC   This is the nucleotide of a human Ikaros partial cDNA, which codes
CC   for a 334-amino acid zinc finger protein (see AAW70969) that is
CC   involved in the early differentiation of lymphocytes. It was
CC   isolated from a Jurkat T cell line library using mouse Ikaros exon
CC   7 cDNA as probe. The Ikaros gene maps between p11.2-p13 on human
CC   chromosome 7. The human and murine Ikaros sequences (see AAV42805-11
CC   and AAV42840) are highly conserved. Differential splicing of Ikaros
CC   gene transcripts gives rise to different Ikaros protein isoforms.
CC   The invention provides Ikaros nucleic acids, vectors and host cells
CC   expressing Ikaros proteins. These are used to treat T and B cell
CC   diseases (e.g. immune deficiencies caused by drugs, radiation or
CC   cancers), to control expression of heterologous genes placed under
CC   control of an Ikaros-responsive element, to treat nervous system
CC   diseases (e.g. Alzheimer's disease) and to modulate cell division,
CC   amplification or differentiation, especially in haematopoietic
CC   cells. Some Ikaros isoforms are antagonistic of others and may be
CC   used to inhibit interaction with DNA sequences. The same effect
CC   can be achieved with Ikaros-binding oligonucleotides. Examining
CC   the expression of the Ikaros gene, or its allelic structure, can be
CC   used to assess risk of acquiring the above diseases.
XX
SQ   Sequence 1004 BP; 235 A; 328 C; 286 G; 155 T; 0 other;

Query Match      56.0%;   Score 868;   DB 19;   Length 1004;
Best Local Similarity   88.8%;   Pred. No. 3.8e-185;
Matches 1004;   Conservative   0;   Mismatches   0;   Indels   126;   Gaps   1;

Qy   421 GGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGCCTCATTCACCCAGAAGGGCAACCTG 480
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     1 ggagaacggcccttccagtgcaatcagtgcaatcagtgcgggcctcattcacccagaagggcaacctg 60

Qy   481 CTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTGCCAACTAC 540
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    61 ctccggcacatcaagctgcattccggggagaagcccttcaaatgccacctgccaactac 120

Qy   541 GCCTGCCCGCCGGAGGGACGGCGCCCTCACTGGCCACCTGAGGACCGCCACTCCGTTGGTAAACCT 600
         ||||||||||||||||||||||||||||||||||||||||||
Db   121 gcctgcccgccgggaggggaccccctacctggcacctggaggaccgcactcc---------- 168

Qy   601 CACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAAGCTCTTTAGAGGAACATAAA 660
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   121 cacaaatgtggatattgtggccgaagctataaacagcgaagctctttagaggaacataaa 168

Qy   169 ------------------------------------------------------------ 168

Qy   661 GAGCGCTGCCACAACTACTTGGAAAGCATGGCCTTCCGGGCACACTGTACCCAGTCATT 720
         ||||||||||||||||||||||||||||||||||||||||||||||||||||  ||||||
Db   169 ----------------------------------------gtcatt 174

Qy   721 AAGAAGAAACTAAGCACAGTGAAATGGCAGAAGACCTGTGCAAGATAGGATCAGAGAGA 780
         |||||||||||||||||||||||||||||||||||  |||||||||||||||||||||||
Db   175 aaagaagaaactaagcacagtgaaatggcagaagacctgtcaagataggatcagagaga 234

Qy   781 TCTCTCCGTGCTGGCAGACTAGCAAGTAAATGTCGCCAAACGTAAGAGCTCTATGCCTCAG 840
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   235 tctctcgtgctggacagactagcaagtaatgtcgccaaacgtaagagctctatgcctcag 294

Qy   841 AAATTTCTTGGGACAAGGGCCGTGTCCGACACGCCCTACCACAGTGCCACGTACGAGAAG 900
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   295 aaatttcttgggacaaggggcctgtccgacacgccctaccacagtgccacgtacgagaag 354

Qy   901 GAGAACGGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAACACGCCCATCAACTAC 960
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   355 gagaacgaatgatgaagtcccacgtgatggaccaagccatcaacacgccatcaactac 414

Qy   961 CTGGGGCCGAGTCCTGCGCCCTGGTGCAGACGCCCCGGCGGTTCCGAGGTGTC 1020
         ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   415 ctggggccgagtcctgcgccctgtgtggtgcagacgccccgggccggttccgaggtggtc 474

Qy  1021 CCGGTCATCAGCCCGATGTACCAGTCGCACAGGCGCTCGGAGGGCACCCCGCGCTCCAAC 1080
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   475 ccggtcatcagcccgatgtaccagtcgcacaggcgctcggagggcacccccgcgctccaac 534

Qy  1081 CACTCGGCCCCAGGACAGCAGCCGCCGTGGAGTACCTGCTGCTCCAAGGCCAAGTTGGTG 1140
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   535 cactcggccccaggacagcagccgccgtggagtacctgctgctctccaaggccaagttggtg 594

Qy  1141 CCCTCGGAGCGCGGAGGGCGTCCCGAGCAACAGCTGCCAAGACTCCACGACACCGAGAGC 1200
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   595 ccctcggagcgcggagggcgtcccgagcaacagctgccaagactccacgacaccgagagc 654

Qy  1201 AACAACGAGGAGCAGCCGCCGTCTTATCTACCTGACCACCATCGCCCGACGCGCG 1260
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   655 aacaacgaggagcagccgccggtcttatctacctgaccaccatcgcccgacgcgcg 714

Qy  1261 CAACGCGTGTCGCTCAAGGAGGAGCACCGCCTACGACCTGCTGCGCGCCGCCTCCGAG 1320
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   715 caacgcgtgtcgctcaaggaggagcaccgcctacgacctgctgcgcgcccgcctccgag 774

Qy  1321 AACTCGCAGGACGCCGCGTCCGCTGGTCAGCACCACGCGGGAGCAGCAGATGAAGGTGTACAAG 1380
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   775 aactcgcaggacgcgctccgcgtggtcagcaccacgcgggagcagcagatgaaggtgtacaag 834

Qy  1381 TGCGAACACTGCCGGGTGCTCTTCCTGGATCACGTCATGTACACCATCCACATGGGCTGC 1440
         ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   835 tgcgaacactgccgggtgctcttcctggatcacgtcatgtacaccatccacatgggctgc 894

Qy  1441 CACGGCTTCCGTGACTCCTTTTGAGTGCAACATGTCGCGCTACCAGCCAGGACCGGTAC 1500
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   895 cacggcttccgtgatcctttgagtgcaacatgtcgcgctaccagccaggaccggtac 954

Qy  1501 GAGTTCTCGTCGCACATAACGCGAGGGAGCACCGCCTTCCACATGAGCTA 1550
         ||||||||||||||||||||||||||||||||||||||||||||||||||
Db   955 gagttctcgtcgcacataacgcgaggggagcaccgccttccacatgagctta 1004


RESULT 13
AAQ44979
ID   AAQ44979 standard; cDNA; 1788 BP.
XX
AC   AAQ44979;
XX
DT   21-OCT-1994  (first entry)
XX
DE   Murine Ikaros gene.
XX
KW   Ikaros; zinc finger; protein; immune disorder; therapy; treatment;
KW   corpus striatum; regulatory gene; ss.
XX
OS   Mus musculus.
XX
FH   Key           Location/Qualifiers
FT   CDS           223..1518
FT                 /*tag= a
FT                 /product= Ikaros protein.
FT   misc_feature  385..387
FT                 /*tag= b
FT                 /transl_except= GAA encodes Glutamine.
XX
PN   WO9406814-A.
XX
PD   31-MAR-1994.
XX
PF   14-SEP-1993;  93WO-US08743.
XX
```

PR   14-SEP-1992;   92US-0946233.
XX
PA   (GEHO) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1994-118387/14.
DR   P-PSDB; AAR46963.
XX
PT   T-cell pathway regulatory gene, Ikaros - encodes family of unique
PT   zinc finger proteins, useful for treating immune system disorders
XX
PS   Claim 13; Page 41-43; 112pp; English.
XX
CC   The Ikaros gene encodes a zinc finger protein which can be used in a
CC   therapeutic composition to treat animals with an immune system
CC   disorder. It may also be used for assessing whether a subject is at
CC   risk for an immune disorder. It is of particular use in treating a
CC   disorder of the corpus striatum.
XX
SQ   Sequence 1788 BP; 437 A; 486 C; 495 G; 370 T; 0 other;

Query Match   52.4%;   Score 813.2;   DB 15;   Length 1788;
Best Local Similarity   85.5%;   Pred. No. 8.3e-173;
Matches 983;   Conservative   0; Mismatches 143; Indels 24; Gaps 6;

Qy   417 CACTGGAGAAACGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGGCAA 476
          ||||||||||||||||||||||| |||| ||||||||||| |||| ||| ||||| |||||
Db   378 catggtgaacggcccttccagtgcaaccagtctggggcctcctttacccagaaaggcaa 437

Qy   477 CCTGCTTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTCTGCAA 536
          ||| ||||||||||||||||||| || |||| || || ||||| |||| || ||| |||||
Db   438 cctcctgccggcacatcaagctgcactcggtgagaagccctcaaatgccatctttgcaa 497

Qy   537 CTACGCCTGCCGCCGGAGGACGACGGCCTCACTGCCACCTGAGGACGACCTCCGTTGGTAA 596
          ||||||||||| |||||||||||||| |||||||||||||| |||||||||||||||||||
Db   498 ctatgctgccgccgcggaggacgacgccctcaccggcacctgaggacgacctccgttggtaa 557

Qy   597 ACCTCACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAACGTCTTTAGAGGAACA 656
          ||||||||||| || ||||| ||||||||||||||||| || ||||| ||||||| ||||||
Db   558 gcctcacaaatgtggatattgtgccggagctataaacagcgaagtctcttagaggagca 617

Qy   657 TAAAGAGCGCTGCCACAACTACTTGGAAAGCATGGCCTTCCGGCACACTGTACCCAGT 716
          ||||| |||||| |||||| || ||||| ||||| || |||||| -|||||||||||||
Db   618 taaagagcgatgtccacaacttactggaaagcatgggccttccggc---gtgtgccagt 674

Qy   717 CATTAAAGAAGAAAACTAAGCACAGTGAAATGGCAGAAGAAGACCTGTGCAAGATAGGATCAGA 776
          |||||||||||| |||| |||||||||||||| || ||| || ||| |||||| ||||| |||
Db   675 cattaaggaagaaaactaaccacacagagatggcaggaggaggacctgcaagataggagcaga 734

Qy   777 GAGATCTCCGTTGCTGGACAGACTAGCAAGTAAATGTCGCCAAACGTAAGAGCTCTATGCC 836
          || || ||| |||||||| |||| ||||| |||| |||||||||| || ||||||||||||
Db   735 gaggtccctgtcctgacagctgcaggctgcaagcaatgtcgccaaacgtaagagctctatgcc 794

Qy   837 TCAGAAATTTCTTGGGGACAAGGGCCTGTCCGACACGACAGTGCCACGTACGA 896
          ||||||| ||||||||||| | ||||| || ||||||||||||||||||| |||
Db   795 tcagaaatttcttggggacaaggcctgtccacatgacagtgccaactatga 854

Qy   897 GAAGGAGAACGAAATGATGAAGTCCCACGTGATGGACCAACAGCCATCAA 956
          |||||| || ||||||||||||||||||||||| || ||||||||||||| ||||||||
Db   855 gaaggag---gatatgatgacatcccacgtgatggaccaggccatcaatgccatcaa 911

Qy   957 CTACCTGGGGGCCGAGTCCTGTCCCGCCCCGTGCTGCAGACGCCCCCCGGCCGTTCCGAGGT 1016
          |||||||||||| |||||||| ||||||||||||||| |||||||||||||| |||||||| |
Db   912 ctacctgggggctgagtcctgtcccgccccattgtgcagcacacccccggtagctccgaggt 971

Qy   1017 GGTCCCGGTCATCAGCCCGATGTACCAGCTGCCACAGGCG---CTCGGAGGGCACCCCGCG 1073
          ||| |||||||||||||||||||||||||||| ||||||||| ||| ||| ||||||| |
Db   972 ggtgccagtcatcagctccatgtaccagctgccacaagccccctccagatgcgccccccacg 1031

Qy   1074 CTCCAACCACTCGGCCCAGGACACAGCGCCGTGGACTGCTCGTCTCCAAGGCCAA 1133
          |||||| || |||| |||| ||||||||||||||||||||||||| ||||||||||

Db   1032 gtccaaccattcagcacagga---cgccgtggataacttgctgctgctgtcaaggcaa 1088
          || |||||| |||| |||| |||| ||||||||||||||||||||||||| |||||
Qy   1134 GTTGGTGCCCTCGGAGCGCCGGCAGGCCTCCCGAGCAACAGCTGCCAAGACTCCACGGACAC 1193
          ||||||||||| ||||| |||||||||||||||||||||||| |||||||| ||| |||| ||
Db   1089 gtctgtcatcggagcgagggcctccccgagcaacagctgccaagactccacagatac 1148

Qy   1194 CGAGAGCAACAACGAGGAGCACGGCAGGTCTTATCTACCTGACCAACCACATCGCCCG 1253
          |||||||| ||||| ||| |||| || || ||| |||| ||| |||||||||||||||
Db   1149 agagagcaacggaggaaacgcgcagcgggccttatctacctacctaaccaaccatcaaccc 1208

Qy   1254 ACGCGCGC---AACGGTGTGCTCAAGGAGGAGCACCGGCCTACGACCTGCTGCGCGC 1310
          |||| ||| ||||||||| || || ||||||||| ||||||||||| ||||||
Db   1209 gcatgcacgcaatggctggctgctccaaggaggagcgcggcctacgaggtgctgagggc 1268

Qy   1311 CGCCTCCGAGAACTCGCCAGGACGACGCGTCCGCGTCCTGGTCAGCACCACGCGGGGAGCAGATGAA 1370
          ||||||||||||| || |||||| ||||||| |||| ||| |||||||||| || ||||||||
Db   1269 ggcctcagagaactcgccaggatgtgtccctccgtggtcagcacgagtggcgagcagctgaa 1328

Qy   1371 GGTGTACAAGTGCGAACACTGCCGGTGTCTTTCCTGGATCACGTCATGTACACCATCCA 1430
          |||||||||||||||||||||||||||||||||||||||||||||||||| ||||||||||
Db   1329 ggtgtacaagtgcgaacactgccggtgtctcttcctggatcacgtcatgtataccattca 1388

Qy   1431 CATG-------GGCTGCCACGGTTCCGTGATCCTTTTGAGTGCAACATGTGCGGCTA 1481
          |||| |||| |||| |||||| || || ||||||||||||||||||||||||
Db   1389 catggctgccatggctgccatggctttcggatccctttcggatgtaacatgtgtggtta 1448

Qy   1482 CCACAGCCAGGACCGGTACGAGTTTCTCGCCACATAACCGAGGGGAGCACCGCGTTCCA 1541
          |||||| ||| |||| |||| ||||| ||| |||| |||| || |||| ||||| |||||
Db   1449 tcacagccaggacaggtacgagttctcatcccatcacacgcggggggagcatcgttacca 1508

Qy   1542 CATGAGCTAA 1551
          ||||||||||
Db   1509 cctgagctaa 1518

RESULT 14
AAT16059
ID   AAT16059 standard; cDNA; 1788 BP.
XX
AC   AAT16059;
XX
DT   08-MAY-1996 (first entry)
XX
DE   Murine Ikaros cDNA mIk-2.
XX
KW   Ikaros; transgene; transgenic animal; transgenic mouse; mIk-2;
KW   immunocomprised; immune system disorder; nervous system disorder;
KW   animal model; ss.
XX
OS   Mus musculus.
XX
FH   Location/Qualifiers
FT   CDS   233..1518
FT   /*tag= a
FT   /transl_except= pos:385..388;_aa:Gln
XX
PN   WO9604372-A1.
XX
PD   15-FEB-1996.
XX
PF   28-JUL-1995;   95WO-US09345.
XX
PR   29-JUL-1994;   94US-0283300.
XX
PA   (GEHO) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1996-129389/13.
DR   P-PSDB; AAR92014.
XX
PT   Transgenic rodent having Ikaros trans-gene (pref. mutated) - is
PT   severely immuno-compromised and can be used as model to determine

```
PT  effects of treatment for immune and nervous system disorders
XX
PS  Disclosure: Fig 1; 102pp; English.
XX
CC  cDNA clones (AAT16059 and AAT16061-64) encode different isoforms,
CC  mIk-2, mIk-3, mIk-1, mIk-4 and mIk-5 (AAR92014 and AAR92016-19,
CC  respectively), of the mouse Ikaros protein, a master regulator of
CC  hematopoietic differentiation. They were isolated from a mature T-cell
CC  line E-14 cDNA library. The isoforms arise by differential splicing
CC  of the Ikaros genomic locus. All include exons E1/2 and E7, but have
CC  different combinations of exons E3-E6 encoding a zinc finger domain.
CC  Transgenic animals, pref. mice, having a mutated Ikaros transgene, esp.
CC  a mutation that alters the DNA binding domain of the Ikaros protein,
CC  are used as models to determine the effects of treatments for immune
CC  or nervous system disorders.
XX
SQ  Sequence 1788 BP; 437 A; 486 C; 495 G; 370 T; 0 other;

Query Match             52.4%;  Score 813.2;  DB 17;  Length 1788;
Best Local Similarity   85.5%;  Pred. No. 8.3e-173;
Matches 983;  Conservative 0;  Mismatches 143;  Indels 24;  Gaps 6;

Qy    417 CACTGGAGAACGGCCCTTCCAGTGCAATCAGTGCGGGGCCTCATTCACCCAGAAGGCCAA 476
          ||| |||||||||| |||| |||  |||||| |||||| ||||||  || |||||||||||
Db    378 catgggtgaacggccttccagtgcaaccagtctgggggcctccttcacccagaaaggcaa 437

Qy    477 CCTGCTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTCTGCAA 536
          |||  ||||||||||||||||| || | |||| |||||||||| |  |||||||| |||||
Db    438 cctcctgcggcacatcaagctgcactcgggtgagaagcccttcaaatgccatccttgcaa 497

Qy    537 CTACGGCCTGCCGCCGGAGGACGCCCTCACTGCCACCTGCCACCTCCGTTGGTAA 596
          ||| |||||||||||||||||||||||  ||| || |||| || | ||||||||||
Db    498 ctatgccctgccgccggaggacgccctccaccggcacctgaggacgcactccgttggtaa 557

Qy    597 ACCTCACAAATGTGGATATTGTGGCCGAAGCTATAAACAGCGAACGTCTTTAGAGGAACA 656
          |||||||||||| ||||||| ||||| |||||||||||||||||  || ||||||||| |
Db    558 gcctcacaaatggatattggccggagctataaacagcgaagcgtcttttagaggagagca 617

Qy    657 TAAAGAGCCGCTGCCACAACTACTTGGAAAGCATGGCCGTTCCGGGCACACTGTACCCAGT 716
          |||||||| | |||||||||||||||||||||||||  ||| |||||   |||| |||||||
Db    618 taaagagcggatgccacaactacttggaaagcatgggcctttccgggc---gtgtgcccagt 674

Qy    717 CATTAAAGAAGAAACTAAGCACAGTGAAATGGCAGAAGACCTGTGCAAGATAGGATCAGA 776
          ||||||||||||||||| |  || ||| |||||||||||||| ||||||||| ||  |||||
Db    675 cattaaggaagaaactaaccaccacagagatggcagaagactgctgcaagataaggagcaga 734

Qy    777 GAGATCTTCCGTGCTGCGACAGCTAGCAGTAATGCTGCCCAAAGTAAGAGCTCTATGCC 836
          || |  ||| || || |||||||| |||||||||||  |  || ||||||||||||||||
Db    735 gaggtccctgtcctgacaggctggcaagcaatgtgcaaagctaagagagctctatgcc 794

Qy    837 TCAGAAATTTCTTGGGGACAAAGGGCCTGTCCGACACGCCCTACGACAGTGCCACGTACGA 896
          ||||||||||||||| |||||| |||||| ||||| |  ||||| ||||||  ||||||| |
Db    795 tcagaaatttcttggagacaagtgcctgtcagacaatgacagtgacagtaggagactatga 854

Qy    897 GAAGGAGAACGAAATGATGAAGTCCCACGTGATGGACCAAGCCATCAACAACGCCATCAA 956
          |||||||   ||||||||| | || |||||||||||||| ||||||||||||||||||||
Db    855 gaaggag---gatatgatgacatcccacgtgatggaccaggccatcaacaatgccatcaa 911

Qy    957 CTACCTGGGGGCCGAGTCCCTGCCCCGGCGGTGCAGACGCCCCCGGCGGTTCCGAGGT 1016
          |||||||||| | |||||||||||| | ||||||||| | ||||||  ||| |||||||
Db    912 ctacctggggctgagtcccctggccatggtgcagacaccccccgtagctccgaggt 971

Qy   1017 GGTCCCGGTCATCAGCCCGATGTACCAGCTGCACAGGCG---CTCGGAGGGCACCCCCG 1073
          ||| | ||||||||||  |  ||||||||||||||| || |  || |||| |||||  ||
Db    972 ggtgcagtcatcagctcacgtaccagctgcacaagcccccccatcagatggccccccacg 1031

Qy   1074 CTCCAACCACTCGGCCCAGGACACGCCCCAGGAGCTACCTGCTGCTCCTCCAAGGCCAA 1133
          ||||||||| | | ||  | ||  | ||   |||| || ||||||||||||||||||||
Db   1032 gtccaaccattcagcacgga---cgccgtggataacttgctgctgtccaaggccaa 1088

Qy   1134 GTTGGTGCCCCTCGGAGCCGCGAGCGCGTCCCCGAGCAACAGCTCCCAGGACACTCCACGGACAC 1193
          || || |||| | ||||| || |||||  | |||||||||||||| ||| |||| || || ||
Db   1089 gtctgtgcatcggagcgagaggcctcccgagcaacagctgccaagactccacagatac 1148

Qy   1194 CGAGAGCAACAACGAGGAGCAGCAGCAGCCGTCTTATCCTGACCAACCACCATCGCCCCG 1253
          ||||||||||  ||||||  ||||| |||||| ||||| || || |||||| |||| |  ||
Db   1149 agagagcaacgcggaggaacagccgcagccgcctttatctacctaaccaaccatcaacc 1208

Qy   1254 ACGGCGCGC---AACGGCGTGTCGCTCAAGAGGAGGAGCACCGGCGCCTACGACCTGCTGCGCGGC 1310
          | | | |  |  |  ||| |||| || ||||||||| || ||||||||||||| ||||| | |||
Db   1209 gcatgcacgcaatggctggctgctcaggaggagaggagcggcgcctacgaggtgctgaggc 1268

Qy   1311 CGCCTCCGAGAACTCCGACGACGACCTCCGGCTGGTCAGCACCAGCGGGGAGCAGATGAA 1370
          |||||| |||||||| || || ||||| ||| ||||||||||| || || | |||| ||||
Db   1269 ggcctcagagaactcgcaggatgcctccgtggtcagcacgagtgggcgcagcagctgaa 1328

Qy   1371 GGTGTACAAGTGCGAACACTGCCGGGTGCTCTTCCTGGATCAGTGTACCACCATCCA 1430
          |||||||||||||||||||||||| ||||||||||||||||| || | | || || ||
Db   1329 ggtgtacaagtgcgaacactgccgcgtgctcttcctggatcacgtcatgtataccattca 1388

Qy   1431 CATG------GGCTGCCACGGCTTCCGCTGATCCTTTTGAGTGCAACATGTGCGGCTA 1481
          ||||      | |||||| |||| |||| |||||| |  ||| | ||||| || | ||
Db   1389 catgggctgccatggctgcatggctttcggatccttggtaacatgtgtggtta 1448

Qy   1482 CCACAGCCAGGACCGGTACCGAGTTCGCGCACATAACGCGAGGGGAGCACCGCTTCCA 1541
          |||||||||||||  |||| |||||| |  | |||| ||| ||||||||| || ||  ||
Db   1449 tcacagccaggacaggtacgagttctcatccatacacgcggggggagcatcggttacca 1508

Qy   1542 CATGAGCTAA 1551
          | |||||||||
Db   1509 cctgagctaa 1518


RESULT 15
AAV66968
ID   AAV66968 standard; cDNA; 1788 BP.
XX
AC   AAV66968;
XX
DT   14-JAN-1999  (first entry)
XX
DE   Murine Ikaros encoding cDNA mIk-2.
XX
KW   CD3-delta gene; Ikaros gene; T cell; progenitor stem cell; leukaemia;
KW   differentiation marker; immune system; corpus striatum; AIDS;
KW   Alzheimer's disease; ss.
XX
OS   Mus sp.
XX
FH   Key            Location/Qualifiers
FT   CDS            223..1518
FT                  /*tag= a
FT                  /product= "mIk-2"
FT                  /transl_except= (pos:385..387,aa:Gln)
XX
PN   US5824770-A.
XX
PD   20-OCT-1998.
XX
PF   05-JUN-1995;   95US-0465590.
XX
PR   02-MAY-1994;   94US-0238212.
PR   14-SEP-1992;   92US-0946233.
PR   14-SEP-1993;   93US-0121438.
PR   05-JUN-1995;   95US-0465590.
XX
PA   (GEHO ) GEN HOSPITAL CORP.
XX
PI   Georgopoulos K;
XX
DR   WPI; 1998-582621/49.
DR   P-PSDB; AAW72671.
XX
PT   Ikaros poly:peptide(s) - useful for treating disorders of immune
PT   system or corpus striatum
```

```
XX
PS   Disclosure: Column 51-56; 111pp; English.
XX
CC   The present invention describes a purified peptide having at least one
CC   of the following properties: (a) it stimulates transcription of a DNA
CC   sequence under the control of a delta A element, an NFKB element or an
CC   Ikaros binding oligonucleotide consensus sequence; (b) it binds to any of
CC   a delta A element, an NFKB element or an Ikaros binding oligonucleotide
CC   consensus sequence; (c) it competitively inhibits the binding of a
CC   naturally occurring Ikaros isoform to any of a delta A element, an NFKB
CC   element or an Ikaros binding oligonucleotide consensus sequence; (d) it
CC   competitively inhibits Ikaros binding to Ikaros responsive elements; or
CC   (e) it inhibits protein-protein interactions of transcriptional complexes
CC   formed with naturally occurring Ikaros isoforms. The proteins, provided
CC   that they stimulate gene transcription under the control of delta A
CC   elements, NFKB elements and/or Ikaros-binding oligonucleotides, bind to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides,
CC   competitively inhibit binding of naturally occurring Ikaros isoforms to
CC   delta A elements, NFKB elements and/or Ikaros-binding oligonucleotides
CC   competitively inhibit Ikaros binding to Ikaros-responsive elements and/or
CC   inhibit protein-protein interactions of transcriptional complexes with
CC   naturally occurring Ikaros isoforms, can be used to treat immune system
CC   disorders, e.g. leukaemia or AIDS, or corpus striatum disorders, e.g.
CC   Alzheimer's disease. The present sequence encodes a specifically
CC   claimed mouse Ikaros protein.
XX
SQ   Sequence 1788 BP; 437 A; 486 C; 495 G; 370 T; 0 other;


Query Match           52.4%;  Score 813.2;  DB 19;  Pred. No. 8.3e-173;  Length 1788;
Best Local Similarity 85.5%;
Matches  983;  Conservative  0;  Mismatches  143;  Indels  24;  Gaps  6;

Qy   417  CACTGGAGAACGGCCTTCCAGTGCAATCGTGCGGGGCCTCATTCACCCAGAAGGGCAA  476
          |||||||||||||||| ||||||| || ||||||| |||||||||| |||
Db   378  catggtgaacggccttccagtgcaaccagtcgggcgcctcctttaccccagaaaggcaa  437

Qy   477  CCTGCTTCCGGCACATCAAGCTGCATTCCGGGGAGAAGCCCTTCAAATGCCACCTCTGCAA  536
          || ||| |||||||||||||| |  ||| |||||| ||  ||||
Db   438  cctcctgcggcacatcaagctgcactcgggtgagagagccctcacaaatgccatctttgcaa  497

Qy   537  CTTACGCCTGCCGCCGCCGGAGGGACGACCGCCCTCACTGGCCACCTGAGGACGCACTCCGTTGGTAA  596
          |||||||||||| |||||||||||||| |||||||||| |||||||||||||||||||||||||
Db   498  ctatgcctgccgccggaggggacgacccgccctcaccggccacctgaggacgcactccgttggtaa  557

Qy   597  ACCTCACAAATGGATATTGTGGCCGAAGCTATAAACAGCGAACGTCTTTAGAGGAACA  656
          ||||||||||| |||||| |||||||||||||||||||| ||| |||||||||||| ||
Db   558  gcctcacaaatgtggatattggccggagctataaacagcgaagctctttagaggagca  617

Qy   657  TAAAGAGCCGTGCCACAACTACTTGAAAAGCATGGCCCTTCCGGGCACCACTGTACCCAGT  716
          ||||||| | |||||||||||||||| |||||| ||||||||||||   ||| |||||||
Db   618  taaagaggatgccacaactacttgaaagcatgggccttccgggc--gtgtgcccagt  674

Qy   717  CATTAAAGAAGAAACTAAGCACAGTGAAATGCAGAGAACCTGTCGAAGATAGGATCAGA  776
          |||||| |||||||||| |||| || |||||||||||||| |||| ||||| |||| |||
Db   675  cattaaggaagaaactaaccaccacagagatgcagagaaccgtgtcaagataggagcaga  734

Qy   777  GAGATCTCTCGTGCTGCGACAGACTAGCAAGTAATGTGCCAAACGTAAGAGCTCTATGCC  836
          ||| || ||| ||| ||||||| | |||||| ||||| ||||||||||||||||||||||
Db   735  gaggtccccctgtcctggacaggctggcaagcaatgtcgccaaacgtaagagctctatgcc  794

Qy   837  TCAGAAATTTCTTGGGACAAGGGCCCTGTCCGACACGCCCTTACGACAGTGCCACGTACGA  896
          |||||||||||||||||||| | |||||||| ||| ||||| |||||||||||| ||||
Db   795  tcagaaatttcttgggacaagtgcctgtcagacatgccctatgacagtgccaactatga  854

Qy   897  GAAGGAGAACGAAATGATGAAGTCCCCACGTGACCAAGCCATCAACAACGCCATCAA  956
          ||||||   ||||||| ||| |||||||||| | ||||||||||||||| |||||||
Db   855  gaaggag--gatatgatgacatcccacgtgatgaccaggccatcaacaatgccatcaa  911

Qy   957  CTACCTGGGGCCCAGTCCCGCCGGCCGCCGCGTGCGACAGCCCCCCGGGGCGGTTCCGAGGT  1016
          ||||||||||| | ||||| || || || |||||| |||| ||||||   |||| |||||||
Db   912  ctacctggggcgtgagtcctgcgccattggtcagacaccccccgtagctccgaggt  971

Qy  1017  GGTCCGGTCATCAGCCGATGTACCAGCTGCACAGGCG---CTTCGGAGGGGCACCCCGCG  1073
          ||| || |||||||| | |||||||||||||| ||    ||| ||| |||||||||||||
Db   972  ggtgccagtcatcagctccatgtaccagctgcacaggcccccctcagatggccccccacg  1031

Qy  1074  CTCCAACCACTCGGCCCCAGACACGCGCCGTGGAGTACCTGCTGCTCGCTCCAAGGCCAA  1133
          |||||| | || || ||  ||||||| || ||||||||||||||||||||| ||||||||
Db  1032  gtccaaccattcagcacagga---cgccggataacttgctgctgtccaaggccaa  1088

Qy  1134  GTTGGTGCCCTCGAGCGCCAGGCGTCCCCGAGCAACAGCTGCCAAGACTCCACGGACAC  1193
          ||||||||| |||||||||||| ||||||||||||||||||||||||||||| || ||
Db  1089  gtctgtgtcatcggagcggaggagcctccccgagcaacagctgccaagactccacagatac  1148

Qy  1194  CGAGAGCAACAACGAGGAGCACGCCAGCAGCGGTCTTATCTCACCTGACCAACCACATCGCCCG  1253
          |||||||||  ||||| |||||| ||| ||||| |||||  |||||||||| |||||| |||
Db  1149  agagagcaacgcggaggaacagcgagcggcggcctta---ctcacctaaccaaccaccatcaaccc  1208

Qy  1254  ACGCGCGC---AACGCGTCGTCCGCTCAAGGAGGAGCACCGCGCCTACGACCTGCTGCCGCGC  1310
          |||| || | |||||| ||||| ||||||||||||||| |||||| ||||| || | ||
Db  1209  gcatgcacgcaatggctggctctcaaggaggagcagcgcggcctacgaggtgctgagggc  1268

Qy  1311  CGGCTCCGAGAACTGCAGGACGACGCTCCGCTGGTCAGCACCAGCGGGGAGCAGATGAA  1370
          |||||||||||||| ||||||  | ||| ||||||| ||||| |||||||| ||| ||
Db  1269  ggcctcagagaactcgcaggatgcctccgtggtcagcacgagtggcgagcagcagctgaa  1328

Qy  1371  GGTGTACAAGTGCGAACACTGCCGGGGTGCTCTTCCTGGATCACGTCATGTACACCATCCA  1430
          |||||||||||||||||||||||| |  |||| |||||||||||||| |||||| |||| |
Db  1329  ggtgtacaagtgcgaacactgccgcgcgtgctcttcctggatcacgtcatgtatacacattcca  1388

Qy  1431  CATG------------GGCTGCACGCGTTCCGTGATCCTTTGAGTGCAACATCGTGCGGCTA  1481
          ||||        ||| |||| |||||| | ||||||||| ||||| |||| | | || |||
Db  1389  catgggctgccatggtgccatggctcttcgggatccctttcggatccctttgagtccctttggtgttaacatgtgtggtta  1448

Qy  1482  CCACAGCCAGGACCCGGTACGAGTTCTCGTCGCACATAACGCGAGGGGAGCACCGGCTTCCA  1541
          |||||||||| ||  ||||| |||| || || |||||| ||  ||||||||||| | ||||
Db  1449  tcacagccaggacaggtacgagttctcatcccatcacgcgcggggggagcatcgttacca  1508

Qy  1542  CATGAGCTAA  1551
          ||||||||||
Db  1509  cctgagctaa  1518


Search completed: August 28, 2002, 09:07:31
Job time: 4271 sec
```